

DOCUMENT RESUME

ED 151 376

TM 006 794

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TITLE Refinement of Reading and Mathematics Test Through an Analysis of Reactivity. Beginning Teacher Evaluation Study. Technical Report Series. Technical Report III-6.
INSTITUTION Far West Lab. for Educational Research and Development, San Francisco, Calif.
SPONS AGENCY California State Commission for Teacher Preparation and Licensing, Sacramento.
PUB DATE 30 Nov 76
NOTE 322p.; For related documents, see TM 006 793 and 795; A few page are marginally legible
EDRS PRICE MF-\$0.83 HC-\$16.73 Plus Postage.
DESCRIPTORS Academic Ability; Academic Achievement; Achievement Gains; *Achievement Tests; *Data Analysis; Data Collection; Diaries; Effective Teaching; Elementary Education; Elementary School Mathematics; Grade 2; Grade 5; *Item Analysis; Measurement Techniques; Reading Tests; *Statistical Data; Student Evaluation; Teacher Evaluation; *Test Construction; Test Items; *Test Validity; Time Factors (Learning)

ABSTRACT

Major analyses of the achievement tests used in the Beginning Teacher Evaluation Study were conducted to determine test reactivity to instruction. Reading and mathematics tests were administered to second and fifth grade children. Classroom teachers' records were examined to determine the amount of opportunity students had to learn the content presented; a matrix of student ability by opportunity to learn is included for each subtest. An analysis of the reactivity of the test items to instruction is also included. Test revisions, as dictated by reactivity analyses and other pilot test data, are described. Reactivity analysis is compared to standard psychometrics as a method of producing tests which are sensitive measures of classroom learning. (GDC)

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BTES

BEGINNING TEACHER EVALUATION STUDY

Technical Report Series

Technical Report III-6

REFINEMENT OF READING AND
MATHEMATICS TESTS THROUGH
AN ANALYSIS OF REACTIVITY

by

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November 30, 1976



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This work was completed pursuant to Contract #400-75-001 between the Department of Health, Education and Welfare, National Institute of Education and the California Commission for Teacher Preparation and Licensing.

The Far West Laboratory for Educational Research and Development, 1855 Folsom Street, San Francisco, CA 94103, is a nonprofit organization supported in part by the United States Office of Education and the National Institute of Education, Department of Health, Education and Welfare. The opinions expressed in this publication do not necessarily reflect the position or policy of these agencies, and no official endorsement by them should be inferred.

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INTRODUCTION

The goal of the Beginning Teacher Evaluation Study is to understand the relationship between instructional variables and student achievement in reading and mathematics at grades 2 and 5. An important part of the instrumentation of such a study is a set of measures of student achievement. This monograph reports on the final stage of an effort to develop appropriate and sensitive measures of student learning.

Conceptual Background

The central concern in test development has been to find measures which are reactive to instruction. The tests used to evaluate instructional processes must be sensitive indicators of classroom learning. Traditional test development techniques emphasize the ability to discriminate between students. Often discrimination is increased at the cost of emphasizing general intelligence and deemphasizing common school learning. Since the Beginning Teacher Evaluation Study seeks to relate instructional variables to student achievement, it is crucial that the student achievement measures assess school learning. Tests should cover the content taught in the classroom, and they should assess growth in student achievement as sensitively and reactively as possible. A more extended discussion of the concept of reactivity can be found in BTES Technical Report III-1 (Filby and Dishaw, 1975). Producing reactive tests is the continuing goal of the BTES test development process.

Chronological Background

The research portion of the Beginning Teacher Evaluation Study will culminate in a final field study known as "Phase III-B." This field study will take place during the school year 1976-77. Phase III-A involves preparation

for the final field study. Part of the preparation has been the development of a student test battery.

As early as 1974, the need for reactive measures of student achievement became apparent. The strategy adopted was to assemble a large battery of achievement measures, assess the reactivity of these measures, and select the most reactive measures for use in Phase III-B.

During the winter and spring of 1975, a large battery of achievement measures in reading and mathematics for grades 2 and 5 was assembled and pilot tested. Pilot test data, including initial measures of reactivity, were used to revise the test battery. These initial development procedures were reported in BTES Technical Report III-1 (Filby and Dishaw, 1975).

This test battery developed in 1975 was subjected to more intensive pilot testing during the 1975-76 school year. With a full year's time available, we were able to study growth over the year as a function of opportunity to learn. Each subtest was analyzed for reactivity. A progress report on reactivity analyses was made in Technical Note III-5 (Filby, 1976). In addition, logical analysis and consultant review were used to refine tests. As a result of the year's analysis the size of the test battery was cut in half, with the most appropriate and reactive measures retained and less suitable measures dropped. This reduced and refined test battery will be used in Phase III-B. The second round refinement process is reported in this document.

Related BTES Studies

The test refinement study reported here is just one of several activities carried out during the 1975-76 school year. An intensive study of the relationship between instructional time and student achievement in grade 2 was also carried out. This study, the Instructional Time Study, shared part of the same

data base that was used to study test reactivity, but supplemented this data base with classroom observation of engaged learning time. The Instructional Time Study is reported in detail in Technical Reports II-3 and II-4 (Fisher, 1976 a and b).

A supplementary part of the test development effort involved individual testing of students on selected scales. Several small-scale studies were carried out at each grade level. The purpose of this individual testing was to understand better how students deal with the group-administered test items. We were on the lookout for places where directions were confusing, where particular items might mislead students, or where the group test underestimates what a student can do. Information from individual testing was used to guide revisions of the group-administered test battery for Phase III-B. Comments about individual testing are made where appropriate in this report. A full account of the individual testing and its implications is made in Technical Note III-4 (Filby and Dishaw, 1976).

Overview of Test Refinement Procedures

In order to assess the reactivity of potential test items, tests were administered three times during the 1975-76 school year--in early October, in December, and in April. Four separate groups of classes were tested--grade 2 reading, grade 2 mathematics, grade 5 reading and grade 5 mathematics.

In each class, the teacher recorded the content of instruction for individual students during the periods between tests. In the October-December period, a daily lesson plan log was used. In the December-April period, a weekly content checklist was used. In both cases the teacher records provided information about the amount of time spent working on particular content areas in the interval between tests. The amount of instructional time received by a student is referred to as "opportunity to learn."

These two sets of data--test scores and time allocations--are matched together through a logical analysis of the knowledge and skills assessed by the test items and covered during instruction. That is, teachers reported the content of instruction in categories matching the content of test items. In this way, we can assess the amount of instruction received by a student in categories that are logically relevant to test performance.

Through the time allocation reports we know what skills a student has had an opportunity to learn and therefore, presumably, those areas in which learning has taken place. Measures of student achievement should be sensitive indicators of this classroom learning. The central question for reactivity analysis is "Do items show gain when instruction has taken place?" Students should perform better on an item after instruction than they do before instruction. Moreover, students who receive a large amount of instruction in a particular area should tend to perform better, show greater gains, than students who receive only a little instruction in a particular area. Items which conform to this pattern are sensitive, reactive measures of classroom learning.

In contrast to this pattern, test items may require or reflect high amounts of general ability. Aspects of test format or test-taking conditions may favor students with higher general ability. Or high ability student may be better able to infer the purpose of test items and apply their relevant knowledge and skill to those items. One kind of evidence that such factors are operating would be a large difference in performance between high and low ability students at the initial October testing session. Similarly, if there are large differences between ability levels when students have had little opportunity to learn, this would suggest that factors other than classroom learning are influencing performance.

Given the concerns outlined above, the general plan for the reactivity analyses was to examine several characteristics of test performance over time. Selected for inclusion in the final test battery were subtests and items which maximize reactivity to the amount of instruction and minimize the influence of general ability factors.

DATA COLLECTION PROCEDURES

Structural Overview

The BTES achievement batteries in reading and mathematics were administered in thirty-one Bay Area classrooms, three times in 1975-76 school year. These three test administrations are referred to as test occasions "A," "B," and "C." Test occasion "A" occurred in the beginning of October, 1975; "B" was in the beginning of December; and "C" occurred in the beginning of April, 1976. The three test occasions yielded the two intertest intervals of A-B and B-C. During the intertest intervals teachers kept records (referred to as teacher logs) of the amount of instructional time in different content areas that was allocated to the participating students in their classroom.

Sample

The field work carried out by Far West Laboratory during the continuation year of Phase III-A of the Beginning Teacher Evaluation Study involved a sample of 31 teachers. This sample was composed of 14 grade 5 and 17 grade 2 teachers. Each volunteered to participate in the one-year study.

The teachers were recruited in the San Francisco Bay Area by Far West Laboratory staff during the spring of 1975. After meetings with administrative officials and building principals in ten districts, individual teachers were contacted. The study was described, and teachers were offered extension credits (through a cooperating college) or an honorarium in return for their participation.

The teachers who volunteered and the classes they teach represent a range of socioeconomic and ethnic groups. Although these factors were not analyzed systematically, an effort was made to make sure the sample accurately represented the composition of the participating districts.

Because of the difficulty in keeping extensive records of instructional time for up to thirty students in both reading and mathematics the teachers were requested to keep records in only one subject area. This gave us four separate sample groups or quadrants, two at each grade level, one for reading and the other for mathematics. At grade 2, nine teachers covered reading and eight covered mathematics. At grade 5, eight teachers covered reading and six covered mathematics.

Not all students in participating classes were followed for the study. In split classes, only grade 2 or grade 5 students were considered. Within grade level, students who were reading well below grade level were not followed. (At grade 2, students had to be reading above a Primer level; at grade 5, at or above a third grade level.) The rationale for this restriction was that testing would be inappropriate and emotionally demoralizing for students below the level of the test. We relied on teacher judgments to decide which students to exclude. In addition, students were deselected if they were non-English speaking or received reading or mathematics instruction outside of the classroom for which records could not be obtained. Deselected students participated in the A, B, and C testings at their teacher's discretion and test scores were reported to teachers on these students as well as for all participating students.

The number of students followed per quadrant is shown in Table 1.

Table 1
Sample Size

Grade Level	Subject Matter	No. of Classes	No. of Students
2	Reading	9	152
2	Mathematics	8	172
5	Reading	8	137
5	Mathematics	6	113

Achievement Testing

In each of the four quadrants, a number of subtests were included in the test battery. Subtests were designed to assess specific skills in reading or mathematics, skills which would be taught in one or more of the frequently used curriculum series (see Filby and Dishaw, 1975). Tables 2, 3, 4, and 5 list, by quadrant, subtests included in the test battery. A description of each subtest and sample items are included in Appendix A.

The achievement tests for each quadrant were divided into four booklets with an allocated testing time of 45 minutes per booklet. The tests were administered in a group situation over a two day period with one day ellapsing between the two test days. Two booklets were administered per day with a minimum break (recess) of 15 minutes between booklets. At grade 2 an effort was made to arrange a longer break (preferably lunch periods) between the booklets.

Testing was conducted by Far West Laboratory staff and test administration manuals were developed. All test administrators were briefed on the testing procedure, and approximately half of the testers administered at least one of the tests in a classroom practice session before testing began. Those test administrators who did not have a practice administration acted as observers at least once while a test was being administered to a class.

The testing conditions were, on the whole, reasonably good. Care was taken to have the teachers present in the classroom, to conduct the testing sessions at the same time of day, and to adhere to time limits developed during pilot testing. These precautions (and many others listed in the training manual) were intended to reduce measurement error; however, the difficulty of conducting testing for whole classes over several occasions is not to be underestimated. Test administrators completed a testing report form after each administration describing general test conditions and any specific problems.

Table 2
Subtests in the Pilot Battery
(Grade 2 Reading)

Number	Title
2R01A	Decoding - Single Consonants
2R01B	Decoding - Consonant Blends and Digraphs
2R02A	Decoding - Single Consonants (Speed Test)
2R02B	Decoding - Consonant Blends and Digraphs (Speed Test)
2R03	Decoding - Variant Consonants
2R04	Decoding Vowels - Long Vowel Final "e"
2R05	Decoding Vowels - Digraphs
2R06	Decoding Vowels - Diphthongs
2R07	Decoding Vowels - with "r"
2R08	Decoding - Complex, Multisyllabic
2R09	Decoding - Consonant Substitution
2R10	Decoding - Sight Words
2R12	Context Clues - Initial Consonant
2R13	Context Clues - Grammatical Sense
2R14	Context Clues - Form of Word
2R16	Word Structure - Root Words
2R17	Word Structure - Compound Words
2R18	Word Structure - Root Word Division
2R19	Word Structure - Number of Syllables
2R20	Word Structure - Contractions
2R22	Word Meaning - Synonyms
2R23	Word Meaning - Multimeaning Words
2R24	Word Meaning - Unfamiliar Words
2R25	Word Meaning - Pronoun Reference
2R27	Comprehension* - Literal Recall
2R28	Comprehension - Translation
2R29	Comprehension - Synthesis
2R30	Comprehension - Extrapolation
2R31	Comprehension - Events
2R32	Comprehension - Description
2R33	Comprehension - Relationships
2R34	Comprehension - Main Idea
2R35	Comprehension - with Picture Response

* Note: Scales 27-30 represent the process dimension and scales 31-34 represent the content dimension in a 4 x 4 matrix of comprehension items.

Table 3
Subtests in the Pilot Battery
(Grade 2 Mathematics)

Number	Title
2M01	Addition without Regrouping
2M02	Addition with Regrouping
2M03	Subtraction without Regrouping
2M04	Subtraction with Regrouping
2M05	Multiplication
2M06	Speed Test in Addition
2M07	Speed Test in Subtraction
2M08	Number Sentences with Equalities and Inequalities
2M09	Renaming Numerals
2M10	Number Patterns
2M12A	Numerals
2M12B	Ordinals
2M13	Place Value
2M14	Fractions
2M15	Properties
2M16	Associative Property with Expanded Notation
2M17	Money
2M18	Linear Measurement
2M19	Measurement Concepts
2M20	Geometric Figures
2M21	Curves and Points
2M22	Word Problems
2M25	Missing Addends

Table 4
Subtests in the Pilot Battery
(Grade 5 Reading)

Number	Title
5R01	Decoding - Variant Consonants
5R02	Decoding - Long and Short Vowels
5R03	Decoding - Vowels with "r"
5R05	Context Clues - Meaning
5R06	Context Clues - Form of Word
5R07	Context Clues - Pronouns
5R09	Word Structure - Identification of Root Words
5R10	Word Structure - Division of Word Parts
5R11	Word Structure - First Syllable
5R12	Word Structure - Last Syllable
5R13	Word Structure - Number of Syllables
5R15	Word Meaning - Synonyms
5R16	Word Meaning - Prefix and Suffix Meaning
5R17	Word Meaning - Multimeaning Words in Context
5R18	Word Meaning - Unfamiliar Words in Context
5R19	Word Meaning - Pronoun Reference
5R20	Word Meaning - Figurative Language
5R22	Comprehension* - Literal Recall
5R23	Comprehension - Translation
5R24	Comprehension - Synthesis
5R25	Comprehension - Extrapolation
5R26	Comprehension - Events
5R27	Comprehension - Description
5R28	Comprehension - Relationships
5R29	Comprehension - Main Idea
5R30	Comprehension - Evaluation of Fact and Opinion
5R33	Study Skills - Reference Sources
5R34	Study Skills - Reference Sources in Books
5R35	Organization of Ideas - Topic Sentence
5R36	Organization of Ideas - Details Relevant to Topic

* Note: Scales 22-25 represent the process dimension and scales 26-29 represent the content dimension in a 4 x 4 matrix of comprehension items.

Table 5
Subtests in the Pilot Battery
(Grade 5 Mathematics)

Number	Title
5M01	Addition of Whole Numbers
5M02	Subtraction of Whole Numbers
5M03	Multiplication of Whole Numbers
5M04	Division of Whole Numbers
5M05	Speed Test (Whole Numbers)
5M07	Equivalent Fractions
5M08	Addition of Fractions
5M09	Subtraction of Fractions
5M10	Addition and Subtraction of Decimals
5M12A	Decimal Place Value
5M12B	Whole Number Place Value
5M13	Properties
5M14	Factors and Prime Factorization
5M16	Perimeter
5M17	Area
5M18	Volume
5M19	Lines
5M20	Figures
5M22	Line and Bar Graphs
5M23	Number Pairs
5M24	Number Patterns
5M26A	One-step Word Problems
5M26B	Two-step Word Problems
5M27	Word Problems using Averages
5M28	Word Problems using Common Measures

Make-up sessions were sometimes scheduled for students who had missed one or more of the test sessions. Because of limited resources it was not possible to conduct make-up sessions for all students.

Student responses were made directly on the test booklets. The completed booklets were returned to Far West Laboratory for processing. Some hand-scoring was required, after which the item responses were punched on cards and verified. Scoring was done by computer and a standard correction for guessing was applied.

Teacher Logs A-B

During the interval between the A and B testing occasions, teachers completed daily "lesson plan" type logs recording the instruction that took place. The logs recorded the content of instruction within a block of time, the setting in which instruction occurred, and the materials that were used. A sample completed log is shown in Figure 1. The term "lesson plan log" was used because the format for recording information resembles that of many lesson plans. Teachers were instructed that they could use this format in planning, but that logs turned in to us should reflect what actually occurred.

An instruction packet was written to explain log-keeping procedures to teachers. Included in the packet were the following materials: instructions on how to keep logs, a list of categories to use in coding content, a glossary explaining terms in the list of content categories, and a sample completed log. These instruction materials are shown in Appendix B. The list of content categories was developed to match the subtests in the test battery. Some additional categories were included to cover areas not tested but in which instruction might occur. For instance, oral reading is a frequent activity in reading, which is not tested directly but is an important part of the reading program and is

TEACHER <u>D Holmes</u>		GRADE <u>2</u>		READING MATH <u>✓</u>		GROUP <u>#1</u>		WEEK <u>9/22-9/26</u>	
		TIME: <u>10:00 to 10:30</u>							
MONDAY	CONTENT		#1 + #3						
	Adult and Seatwork No Adult and Other		A + O (Adult + other)						
	MATERIAL		msm - Modern School Mathematics (Houghton Mifflin) msm pgs. 32 + 33						
TUESDAY	CONTENT		#13 = 15 mins.		#13 = 15 mins				
	Adult and Seatwork No Adult and Other		A + O		N + S (No Adult + Seatwork)				
	MATERIAL		msm - pg 34 + 35		msm work book pgs 31 + 32				
WEDNESDAY	CONTENT		#13 + #2 20 mins.		#13 10 mins.				
	Adult and Seatwork No Adult and Other		A + O		N + S				
	MATERIAL		msm pg. 36 + 37		Ditto - attached				
THURSDAY	CONTENT		#2 - 15 mins.		#1 + #2 15 mins				
	Adult and Seatwork No Adult and Other		A + O		A + S				
	MATERIAL		msm pg 39		msm work book pg. 33 + 34				
FRIDAY	CONTENT		#18						
	Adult and Seatwork No Adult and Other		A + O						
	MATERIAL		string, rulers, classroom objects, pencil & paper.						

Figure 1

Sample Lesson Plan Log
(used A to B)

potentially relevant to specific test categories. We wanted to have some code available for all reading or mathematics activities.

Instructions on log keeping were handed out to teachers in September, 1975. Staff members met with teachers to explain the study and the procedures involved. Teachers kept practice logs between these initial meetings and the week of "A" testing. During practice logging and the first weeks of data collection after the "A" testing, each teacher was visited several times so that any questions about log keeping would be answered. The amount of feedback which teachers required varied considerably. The more complex the organization for instruction was, the more complicated the log keeping became.

Once the class rosters were finalized and teachers had some practice, the log keeping seemed to go smoothly. Teachers were asked to complete their logs each day, and to return them to the Far West Laboratory by mail every Friday. When logs were returned to the Far West Laboratory they were visually checked by the staff member responsible for the quadrant to which the logs belonged. The A-B lesson plan logs often included a brief verbal statement of the lesson and/or the textbook page numbers used for the lesson. This information was used to check the accuracy of the content code numbers. The familiarity of the staff with the individual classrooms was a further aid in evaluating the logs. When ambiguities or questions on content coding arose the teachers were contacted by phone or personally visited to clarify these problems. As the A-B period progressed and individual problems were resolved, log ambiguities and errors decreased considerably.

Once the logs had been reviewed and approved the information was transferred onto standard IBM coding sheets. The log for any given day was coded as a series of events, where each event was defined by a content code, the setting codes, and the time allocated to that event. For instance, the Monday sample log would be represented as 2 events. The thirty minutes would be split between the 2 content

codes to yield 15 minutes in content number 1, setting A and O, and 15 minutes in content number 3, setting A and O. Events were associated with particular students, so that a student's mathematics instruction for the day appeared as a series of events. All of the logs were punched by student by day. Given that a student typically had from four to eight events per day, and that the sample of approximately 600 students was tracked by logs for approximately 40 days in the A-B period, the management of the log data was a challenging task.

Once all of the logs were coded and punched, two types of validity checks were carried out. First, the number of days represented for each student was checked to make sure that all the days in the A-B interval were accounted for. This task was done by hand, using the raw logs and absentee information to edit any discrepancies. In addition, for one student in each class, the number of events on the computer printout was handchecked against the raw logs. This was done to insure that students had the correct number of events. Besides the handchecking procedures, range tests were made by the computer.

When the log data had been checked and cleaned in this manner, allocated times were accumulated over days. For the A-B period this generated a vector of times (in minutes) for each student on each of the possible content codes. The time data used in the A-B analyses of reactivity were based on these accumulated totals.

Accuracy of logs. Some information about the accuracy of teacher logs is available. In the Instructional Time Study, direct observation was carried out in six grade 2 classes where teachers kept logs in both reading and mathematics. A comparison of these two sources of data, teachers and observers, is reported in Technical Notes II-3 and II-4 (Fisher, 1976). Differences in the procedures used in the two cases make interpretation difficult; but it appeared that, on the whole, teachers were giving reasonable codings of classroom events.

In addition to this intensive observation, each class was observed one day by the person coding log data for the class. This check was made primarily to ensure that the coder was interpreting the teacher's logs accurately. A comparison of content coding by teacher and coder on that day yielded some differences. In particular it appeared that some teachers had turned in logs based on lesson plans and had not noted changes made in actual instruction. We talked again with the teachers to make it clear that logs should be made at the end of each day.

Teacher Logs B-C

The logs for the B-C time interval were in a checklist type format. Teachers were no longer required to submit information on setting. Time allocations were reported on a weekly basis rather than a daily basis. With their experience from the A-B period teachers were requested to note the approximate amount of time in a content area on a daily basis and then to sum these amounts for a weekly total. Amounts of time were then letter coded using the following key:

0-10 minutes per week = leave blank

11-30 minutes per week = L

30-90 minutes per week = M

over 90 minutes per week = H

A sample checklist log is shown in Figure 2. Instructions and log forms for all four quadrants are presented in the last part of Appendix B.

When these logs were received by the Lab they were reviewed to determine if the total time recorded was a reasonable one and if so, the log was approved for processing. The time was again coded as a series of events for the individual student except that for B-C the event was simply the time spent in a specific content category on a weekly basis.

Once the data had been coded, keypunched and verified, time transformations were applied. Each letter code was replaced by the average amount of time that

Grade 2 Mathematics

Code:

0-10 minutes

blank

Teacher: Howard

11-30 minutes

L

Week: Jan 12 - 16th

31-90 minutes

M

over 90 minutes

H

CONTENT	Group #1	Group #2	
I COMPUTATION			
1. Addition without regrouping	L	M	
2. Addition with regrouping	M		
3. Subtraction without regrouping		M	
4. Subtraction with regrouping			
5. Multiplication			
6. Speed tests in addition			
7. Speed tests in subtraction			
8. Number sentences involving $<, >, =, +, -$			
9. Family of facts	L	L	
10. Number patterns	L	L	
25. Missing addends			
II CONCEPTS AND APPLICATION			
12A. Numerals			
12B. Ordinals			
13. Place value	L	L	
14. Fractions			
15. Properties			
16. Associative property with expanded notation	L		
17. Money			
18. Linear measurement			
19. Measurement concepts			
20. Geometric figures			
21. Curves and points			
26. Developmental activities			
23. Word problems	L	L	

Figure 2

Sample Checklist Log
(used B to C)

it represented. Time code "L" was set equal to 20 minutes. Time code "M" was set equal to 60 minutes. The amount of time represented by "H" varied. An examination of A-B logs was made to determine the most appropriate equivalences, so that total time for the week would be reasonable. In reading at both grade levels, "H" was set equal to 130 minutes. In mathematics at grade 2, "H" was set equal to 100 minutes. Since the grade 5 mathematics classes had a lower distribution of time over varying content areas, the "H" time code had to be transformed on an individual class basis, and ranged from 100 to 150 minutes. Once time transformations had been applied, time was summed up over weeks. As in the A-B period, this resulted in a record of total time (in minutes) for each student on each of the possible content codes.

DATA ANALYSIS

Overview

The primary analysis examined the reactivity of individual subtests in the test battery. Two ability by opportunity-to-learn matrices were constructed for each subtest, one for the A-B period and one for the B-C period. Each matrix showed subtest gain scores as a function of ability and opportunity to learn. Ability was defined as academic status at the beginning of the year, that is, total score on the "A" test battery. Opportunity to learn was defined as amount of instructional time in the most closely matched content category in the teacher logs. Reactivity analyses will be discussed in detail in this section of the report.

For subtests that showed gain when instruction took place, further reactivity analyses were carried out at the item level. Each individual item in the subtest was examined for reactivity so that the best items could be selected for the final battery.

A second kind of follow-up to the scale reactivity analyses was an analysis of general scales. General scales were formed by combining logically related subtests. The relationship between time and learning was examined at this general level by comparing gain on each general scale to time in the corresponding aggregated time category. The primary purpose of analyses at the general level was to identify areas in which general rather than specific scales could be used in the Phase III-B battery.

In addition to these reactivity analyses, other sources of information contributed to test refinement. Standard item analyses were carried out on each subtest. These analyses produced summary scale statistics such as the mean, standard deviation, and an internal consistency reliability coefficient. At the item level they provided the point biserial correlation of each item with

total score on the subtest. This correlation, often used in traditional test development, was of secondary importance to us compared with reactivity data. The relationship between the two is discussed briefly later on. More useful item statistics were the proportion and mean score of students selecting each response alternative. These data allowed a qualitative understanding of errors and suggested ways to improve distractors.

A final source of data was logical analysis of tests. In this process we were aided by advisors to the Commission, who reviewed and critiqued all subtests in the pilot battery. Their comments were very valuable. In addition, some teachers provided comments about the tests.

Data for each subtest are reported in Appendix A. The first page of data for each subtest provides a description of the scale, gives general scale statistics for each of the three testing occasions, and summarizes the revisions made in the scale on the basis of the year's analysis. The second page reproduces the two reactivity matrices carried out at the specific level for each scale, and also summarizes item reactivity where appropriate. Figures 3 and 4 provide an example of these Appendix A data pages. These figures will be referred to throughout this section of the report, as we discuss the kinds of data reported and elaborate on analysis procedures.

Growth over the Year

Perhaps the first question of interest to get a sense of the data is did scores improve over the year? For second grade, the answer is resoundingly yes. Mean scores went steadily up from A to B to C, often averaging 15 percent gain between testings. For grade 5, gains were smaller, especially in reading.

Grade 2 Mathematics 2M03

Scale Name: Subtraction Without Regrouping

Description: Tests the student's knowledge of basic facts and the subtraction algorithm without regrouping. Items range from the subtraction of two 1-digit numbers to two 3-digit numbers.

Example:

$15 - 8 = \square$	(A) 7	C. 13
	B. 9	D. 8

Number of Items: 16Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	3.48	6.28	8.38
	Standard Deviation	4.60	6.09	5.74
	Mean Proportion Correct	.22	.39	.52
	Coefficient Alpha	.80	.89	.87
	Standard Error of Measurement	2.01	1.93	1.98
UPPER STRATA	Mean	6.32	10.73	12.13
	Standard Deviation	3.54	4.87	3.21
	Proportion near Ceiling	.05	.55	.51
MIDDLE STRATA	Mean	1.92	5.76	9.95
	Standard Deviation	2.81	4.82	4.29
	Proportion near Ceiling	.00	.14	.29
LOWER STRATA	Mean	0.58	2.03	4.50
	Standard Deviation	2.11	4.01	4.35
	Proportion near Ceiling	.00	.03	.04

Revisions:

One item was revised and four were added for a 20 item scale to be given at the "A" test administration. Core scale of 16 items will be retained at the "B", "C", and "D" test points.

Figure 3

Example of Appendix A Data Page One

2M03
Scale Reactivity

A to B

UPPER	2.13* (8)	2.80 (5)	4.60 (20)	6.58 (8)
MIDDLE	.97 (12)	4.07 (5)	4.59 (18)	7.76 (7)
LOWER	-.64 (12)	3.25 (4)	2.82 (9)	.71 (8)

0-99 100-174 175-249 over 250
Minutes

* Mean Change
(n)

in Subtraction, No Regrouping

B to C

UPPER	1.02 (17)	.57 (14)		3.27 (10)
MIDDLE	4.00 (4)	4.81 (12)	1.33 (5)	6.41 (13)
LOWER	5.58 (4)	3.75 (4)	2.42 (4)	1.69 (15)

0-119 120-239 240-359 over 360
Minutes

in Subtraction, No Regrouping

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B Gain	to Reactivity	C
1	.47	.12	+	.14	+	
2	.42	.16	+	.36	-	
3	.33	.19	+	.19	-	
4	.14	.19	+	.31	-	
5	.37	.28	+	.08	-	
6	.07	.26	+	.31	-	
7	.39	.20	F	.24	+	
8	.27	.23	-	.21	F	
9	.27	.20	+	.24	F	
10	.14	.30	+	.35	+	
11	.18	.30	+	.26	F	
12	.44	.25	+	.21	F	
13	.23	.18	+	.35	-	
14	.20	.20	+	.26	-	
15	.14	.16	F	.35	+	
16	.11	.09	+	.21	+	

Figure 4

Example of Appendix A Data Page Two

Overall gain can best be seen in the section of the Appendix A scale statistics labeled "Total Sample" (see Figure 3). The first row gives the mean score for the total tested population at each of the three test points. The third row represents this mean as a proportion of the number of items in the scale. Other general scale statistics are also presented in this section of the data page.

A standard correction for guessing was applied to all subtests during the scoring process. Since many of our subtests were multiple choice and very difficult, especially at "A," this procedure served to equate students who guessed randomly with those who did not respond. Each score then represents more accurately what the student knows. Since the correction for guessing was applied, the mean score and mean proportion given above represent corrected scores.

Academic Status

One issue of interest in the analysis of reactivity is the role of general ability in influencing test scores. For this year's analysis, we used as a measure of ability the student's total score on the "A" test battery. Since this battery includes a range of specific measures, standing across all measures probably reflects the student's general ability to learn in school and to perform well in achievement test conditions. In order to avoid confusion with the label "ability" as a measure of innate potential, we use the more specific term "academic status" (ACSTAT) to describe this total score.

The population of students in each quadrant was divided into strata on the basis of total test scores (ACSTAT). For the grade 2 mathematics quadrant four cutpoints were made yielding the five ACSTAT levels (stratas) shown in Table 6.

Table 6
Academic Status Strata Designations
(Grade 2 Mathematics)

	ACSTAT Strata	Percentile Range	No. of Students	Range of "A" Scores (% correct)
	Level 1:	0-9.9	17	Neg. - 3%
(Lower)	Level 2:	10-37.9	48	4% - 13%
(Middle)	Level 3:	38-64.9	46	13% - 25%
(Upper)	Level 4:	65-91.9	47	26% - 50%
	Level 5:	92-100	14	52% - 80%

Students in ACSTAT Level 1 were considered below the level of the test and ACSTAT Level 5 students were above the test level in that they were topping out on some scales even at "A." ACSTAT Levels 2, 3, and 4 were used for reactivity. Not all quadrants had five ACSTAT levels. In grade 5 mathematics the frequency distribution of total scores showed that none of the students were topping out at "A." Therefore, the grade 5 sample was divided into three ACSTAT levels of Lower (N = 21), Middle (N = 54), and Upper Strata (N = 36). Reactivity for grade 5 was conducted for the Middle and Upper ACSTAT stratas. In grade 2 reading there were 4 stratas: Lower (N = 21), Lower Middle (N = 47), Upper Middle (N = 41), and Upper (N = 35). Reactivity analyses were carried out for the two middle groups. In grade 5 reading there were 5 stratas (as for grade 2 mathematics above): Level 1 (N = 12), Lower (N = 29), Middle (N = 50), Upper (N = 27), and Level 5 (N = 19). Analyses were performed for the three named stratas.

Scale statistics for the selected reactivity stratas are reported on the first page of subtest data in Appendix A, immediately below the total population scale statistics (see Figure 3). In addition to subtest means and standard deviations within each ACSTAT group, information on the percentage of students

near ceiling is also included. Proportion near ceiling reports the proportion of students within strata that scored 80 percent or better on the subtest.

Focus on Middle Strata. In each quadrant the middle strata statistics are particularly important. The research plan for Phase III-B calls for identifying six target students per class within a restricted range of entering academic status. Following a few target students has practical advantages for observation and teacher record keeping. From the viewpoint of testing, following students within a restricted range allows us to select tests which will be more nearly appropriate for all students in the study. As Figure 3 shows, students in different strata are at different levels of achievement on specific subtests. In subtraction without regrouping, half the upper strata students are near ceiling at "C" while the lower strata students are still near the bottom. Different subtests appear to be appropriate for student at different levels of entering academic status. We want to select tests which will be appropriate for the band chosen in Phase III-B.

Choice of the middle strata as a focus point is based on the fact that students will be selected across a range of classes. The most likely point of overlap is near the middle of the distribution. An examination of the distribution of ACSTAT scores across classes confirmed this statement. Therefore, in selecting and revising tests, middle strata data were the primary consideration. Other strata are included in data reports in order to understand better the properties of the tests.

Opportunity to Learn

As described in the section on data collection, instructional time in each of the categories from the teacher log was summed up over the intertest period. This procedure was carried out for each individual student.

The first descriptive question for the time data is what did students spend time learning? A survey of the data reveals large differences in what students spend time doing. Tables 7 through 14 summarize the allocated time data. Each table takes a particular grade level, subject matter, and time period, and shows, by class, the mean time allocated to each content area. For instance, in Table 9, for grade 2 mathematics A to B, row 3 shows time in subtraction without regrouping. For the students in class 1, the average allocated time was 226 minutes. The highest time was class 5, where, on the average, a student spent 373 minutes working on subtraction with no regrouping. In class 7, no time was spent in this area. As you can see, a test of subtraction without regrouping is differentially appropriate as a measure of classroom learning across these 8 classes.

The question for test development is whether our measure shows gain when instruction took place. In order to answer this question via the ability by opportunity-to-learn matrix, the continuous dimension of time in minutes was broken into discrete levels. Cut-points along the time dimension were established so that each student could be assigned to a particular level of opportunity to learn. This procedure was carried out separately for each time category. Cutpoints were made based on the natural variance in time across students, classes, and ACSTAT levels. An effort was made to get a sizable number of students in each interval. An effort was also made to select time stratifications which could be appropriately applied to more than one time category. For subtraction with no regrouping, A to B, the cutpoints were 100 minutes, 175 minutes, and 250 minutes. The four time intervals or levels of opportunity to learn were therefore, 0-99 minutes, 100-174 minutes, 175-249 minutes, and over 250 minutes.

Table 7

28.

Class Average Allocated Time
Grade 2 Reading, A to B

CONTENT		CLASS								
		1	2	3	4	5	6	7	8	9
DECODING	Single consonants 1.	106	9	185	41	71	51	174	357	186
	Consonant blends and digraphs 2.	74	151	55	103	64	29	24	104	234
	Variant consonants (c,g) 3.	129	16	3	25	34	10	4	17	1
	Vowels--short 4.	236	209	122	75	96	267	79	202	200
	Vowels--long with final e 5.	151	32	141	62	54	137	29	18	130
	Vowels--digraphs 6.	110	26	16	33	62	34	15	33	114
	Vowels--diphthongs 7.	138	8	0	8	7	23	15	10	12
	Vowels--with r (car) 8.	84	15	12	12	52	14	0	5	6
	Complex, multisyllabic 9.	19	0	0	0	0	0	1	0	6
	Silent letters 10.	43	0	2	11	3	0	0	0	6
	Sound substitution, rhyming 11.	143	11	115	79	140	62	137	102	9
	Automaticity of decoding 13.	16	196	218	190	32	30	196	99	43
CON- TEXT CLUES	Any use of format where child must choose a word to fill a blank 15-20.	200	24	117	107	76	78	143	88	220
WORD STRUCTURE	Compound words 21.	131	13	80	52	34	17	47	9	104
	Identification of root words 22.	136	4	5	0	8	115	29	0	0
	Prefixes--meaning and use 23.	13	9	0	0	3	5	7	0	0
	Suffixes--meaning and use 24.	135	30	10	5	168	7	53	68	117
	Contractions 25.	150	0	0	0	10	17	0	0	0
	Syllables 26.	66	37	1	3	32	20	0	11	2
WORD MEANING	Synonyms 28.	14	0	0	0	2	6	13	0	95
	Vocabulary (definitions) 30.	71	0	62	118	24	163	53	77	25
	Pronoun reference 31.	9	0	0	8	0	0	0	8	0
	Multimeaning words in context 32.	0	0	5	0	0	4	7	0	0
	Unfamiliar words in context 33.	39	3	0	71	0	55	0	6	0
COMPREHENSION OF TEXT	Understanding event detail 36.	13	85	32	51	64	15	61	20	51
	Understanding descriptions 37.	0	0	7	59	30	1	66	7	30
	Understanding relationships 38.	24	0	47	0	44	4	33	16	4
	Understanding main ideas 39.	11	78	109	111	15	3	70	25	18
	Direct recall of information 40, 41.	46	85	22	74	23	29	75	3	76
	Inference, interpretation 42, 43.	15	0	0	0	0	21	39	22	0
APPLICATION	Understanding directions 46.	2	0	38	102	14	7	47	28	35
	Picture interpretation to aid comprehension 47.	7	0	19	66	0	0	17	18	0
	Table of contents 49.	0	0	34	0	0	6	0	10	0
	Understanding of signs 51.	2	0	7	0	0	0	0	27	0
	Understanding letters 52.	1	0	0	0	0	0	0	7	0
GENERAL ACTIVITIES	Sight words (general practice at reading single words; no specific decoding emphasis) 12.	73	4	196	154	10	134	255	130	12
	Spelling (use specific code, if applicable) 58.	168	1007	449	75	96	594	369	330	232
	Oral reading of text 56.	302	224	293	77	145	52	153	104	64
	Silent reading of text +55 +57 62.	182	245	470	382	206	280	249	312	229
	Creative writing 60.	71	568	0	109	19	201	74	2	0
	Pennmanship and copying 64.	7	143	62	0	39	333	159	33	631
	Listening (to story or tape) 63.	15	326	262	57	126	342	85	67	25
	Grammar 59.	49	0	43	0	33	39	64	20	634

Table 8

29.

Class Average Allocated Time
Grade 2 Reading, B to C

CONTENT		CLASS								
		8	10	11	12	14	16	9	13	17
DECODING	Single consonants 1.	49	24	360	70	12	84	230	222	164
	Consonant blends and digraphs 2.	114	69	175	280	129	156	120	293	150
	Variant consonants (c,g) 3.	71	9	249	5	77	4	38	155	46
	Vowels--short 4.	371	84	198	105	24	107	285	325	396
	Vowels--long with final e 5.	427	40	100	135	109	141	165	230	207
	Vowels--digraphs 6.	120	16	60	85	232	91	78	270	17
	Vowels-diphthongs 7.	63	13	60	45	83	151	58	223	100
	Vowels--with r (car) 8.	107	4	38	15	17	16	0	225	0
	Complex, multisyllabic 9.	57	0	0	0	8	13	0	93	0
	Silent letters 10.	89	0	0	70	73	82	0	175	17
	Sound substitution, rhyming 11.	141	0	176	50	203	68	268	225	143
	Automaticity of decoding 13.	60	71	60	50	32	41	150	415	6
CON- TEXT CLUES	Any use of format where child must choose a word to fill a blank 15-20.	66	96	329	610	11	372	460	138	549
WORD STRUCTURE	Compound words 21.	136	60	95	25	147	41	90	60	0
	Identification of root words 22.	104	33	129	0	45	166	75	30	11
	Prefixes--meaning and use 23.	26	42	0	0	67	24	0	0	0
	Suffixes--meaning and use 24.	43	60	0	0	163	147	225	150	107
	Contractions 25.	214	38	218	15	145	13	120	0	0
	Syllables 26.	137	4	0	5	367	124	30	128	37
WORD MEANING	Synonyms 28.	163	33	60	30	59	8	85	60	106
	Vocabulary (definitions) 30.	129	20	238	30	36	41	188	153	40
	Pronoun reference 31.	86	0	0	155	0	0	73	50	0
	Multimeaning words in context 32.	120	0	18	0	5	12	108	60	0
	Unfamiliar words in context 33.	137	20	20	45	36	113	63	163	0
COMPREHENSION OF TEXT	Understanding event detail 36.	131	253	235	245	399	236	223	200	266
	Understanding descriptions 37.	0	24	0	55	11	13	210	113	186
	Understanding relationships 38.	29	246	20	10	11	71	228	133	197
	Understanding main ideas 39.	51	293	238	228	3	208	222	250	391
	Direct recall of information 40, 41.	86	253	149	135	107	149	210	80	600
	Inference, interpretation 42, 43.	51	60	0	10	9	111	208	65	14
APPLICATION	Understanding directions 46.	167	0	145	370	84	12	160	143	240
	Picture interpretation to aid comprehension 47.	43	0	40	140	0	17	163	118	11
	Table of contents 49.	137	0	0	0	0	5	65	33	0
	Understanding of signs 51.	0	0	0	0	0	0	5	0	0
	Understanding letters 52.	0	0	0	0	0	1	0	68	0
GENERAL ACTIVITIES	Sight words (general practice at reading single words; no specific decoding emphasis) 12.	40	73	305	180	120	120	575	293	186
	Spelling (use specific code, if applicable) 58.	247	811	271	495	209	0	595	344	450
	Oral reading of text 56.	229	413	709	315	317	360	420	218	151
	Silent reading of text 62.	46	1006	249	1250	347	330	435	278	337
	Creative writing 60.	283	616	133	450	20	480	225	60	251
	Penmanship and copying 64.	267	240	505	215	149	1000	185	148	327

Table 9
Class Average Allocated Time
Grade 2 Mathematics, A to B

CONTENT	CLASS							
	1	2	3	4	5	6	7	8
I COMPUTATION								
1. Addition without regrouping	284	285	271	210	278	363	124	344
2. Addition with regrouping	50	25			186	638		2
3. Subtraction without regrouping	226	219	178	93	373	271		187
4. Subtraction with regrouping		11			239	1		
5. Multiplication					98			
6. Speed tests in addition	34					15		52
7. Speed tests in subtraction	29			3		15		
8. Number sentences involving $<, >, =, +, -$	29	119	10	122	13	66	306	20
9. Family of facts	62	206	83	291	96	36		172
10. Number patterns	67	75		12	96	134		184
25. Missing addend	56	36	132	178	102	46		66
II CONCEPTS AND APPLICATION								
12A. Numerals	9	111	15	78	137	11	481	65
12B. Ordinals								
13. Place value	42	45		25	70	318	96	63
14. Fractions	69			40		24	66	74
15. Properties	10			127	29	90		7
16. Associative property with expanded notation	34					12		17
17. Money	14	64		67	3	16	15	91
18. Linear measurement	43			61		3		108
19. Measurement concepts	9			48				54
20. Geometric figures	103		36	42		2	65	30
21. Curves and points	33			76	27			20
22. Disproportional activities			548	57		43	51	70
23. Word problems	11			25		108	141	33
11, 22, 24 - Other content	85	14	33	53	125	101	124	101

Table 10

Class Average Allocated Time
Grade 2 Mathematics, B to C

CONTENT	CLASS							
	1	2	3	4	5	6	7	8
I COMPUTATION								
1. Addition without regrouping	174	266	108	715	465	252	470	227
2. Addition with regrouping	579	480	35	106	249	447		310
3. Subtraction without regrouping	97	94	248	422	365	172	464	150
4. Subtraction with regrouping	366	102		63	253	690		180
5. Multiplication	60	80		61	60	222	119	50
6. Speed tests in addition	110	112		58			196	119
7. Speed tests in subtraction	91	12		39			196	99
8. Number sentences involving $<, >, =, +, -$	19		105	23	20	45	64	149
9. Family of facts		168		126	233		8	128
10. Number patterns		28	8	153	149	97		140
25. Missing addends			70	87	267	20	166	258
II CONCEPTS AND APPLICATION								
12A. Numerals				98	215		13	69
12B. Ordinals			170	20				9
13. Place value	60	542	70	337	69	20	219	417
14. Fractions	100			3		208	238	60
15. Properties	100			1	26			
16. Associative property with expanded notation	79			433		20		317
17. Money	189	46		24	37	138	23	120
18. Linear measurement				3	20	153	20	30
19. Measurement concepts		8		2	24	120		30
20. Geometric figures	60	76	45	18	29	18		100
21. Curves and points		6		13	74	38		50
26. Developmental activities		20	865	2	273	13		160
23. Word problems		24		119		193	427	159

Table 11

32.

**Class Average Allocated Time
Grade 5 Reading, A to B**

			CLASS							
CONTENT			1	2	3	4	5	10	12	15
DECODING	Variant consonants (c,q)	3.	0	0	6	0	4	0	6	12
	Vowels--short	4.	0	0	7	7	21	19	0	2
	Vowels--long	5.	0	0	26	27	56	12	0	2
	Vowels--with r	8.	0	0	104	53	6	0	0	2
CON- TEXT CLUES	Any use of format where child must choose a word to fill a blank.	15-20.	37	25	174	179	185	81	79	81
WORD STRUCTURE	Identification of root words	22.	0	0	35	12	3	0	2	30
	Prefixes--meaning and use	23.	0	7	97	8	2	14	23	106
	Suffixes--meaning and use	24.	0	7	112	33	22	43	37	85
	Syllables	26.	35	17	1	38	8	226	19	9
WORD MEANING	Synonyms	28.	0	35	15	19	40	0	0	5
	Vocabulary (definitions)	30.	21	106	262	270	16	86	171	75
	Pronoun reference	31.	0	33	53	62	0	0	0	0
	Multi-meaning words in context	32.	11	15	9	0	7	6	11	39
	Unfamiliar words in context	33.	0	25	48	0	64	6	9	87
	Figurative language	34.	30	17	60	18	1	0	10	23
COMPREHENSION OF TEXT	Understanding event detail	36.	11	85	136	22	44	27	17	34
	Understanding description	37.	0	9	181	0	45	11	68	23
	Understanding relationships	38.	124	56	207	137	44	16	20	61
	Understanding main ideas	39.	113	127	145	317	46	107	183	52
	Literal recall	40.	127	40	49	77	33	105	8	44
	Translation of ideas, paraphrase	41.	85	34	111	99	71	21	14	19
	Synthesis of ideas, inference	42.	50	28	205	76	13	0	35	71
	Going beyond the text, prediction	43.	79	26	145	64	8	6	19	6
	Recognizing facts and opinions	44.	53	13	98	0	44	0	5	7
	General comprehension	45.	10	33	73	348	100	147	42	129
APPLICATION	Understanding directions	46.	12	20	29	8	39	30	0	64
	Reference sources in books (table of contents, index, glossary)	49.	218	9	69	78	0	0	7	0
	Choosing reference sources (dictionary, encyclopedia, card catalog)	50.	413	120	124	73	30	0	113	394
	Understanding signs	51.	69	0	0	0	0	6	0	0
	Understanding letters	52.	0	1	0	21	0	0	0	0
	Understanding maps	53.	111	3	65	650	102	133	0	46
		56.	90	92	88	60	148	368	85	370
GENERAL ACTIVITIES	Oral reading									
	Silent reading 55+57+	62.	178	266	404	545	265	225	129	310
	Spelling (use specific code, if applicable)	58.	513	10	361	169	627	707	285	214
	Grammar	59.	167	37	194	236	88	71	156	314
	Creative writing	60.	275	92	144	227	518	244	109	0
	Reading in content areas (for science and social studies, use this code only)	61.	178	104	502	511	33	210	155	155

Table 12

Class Average Allocated Time
Grade 5 Reading, B to C

CONTENT			CLASS						
			1	2	3	4	5	10	15
DECODING	Variant consonants (c,g)	3.	0	20	120	0	0	0	18
	Vowels--short	4.	0	4	20	20	2	40	7
	Vowels--long	5.	0	64	60	0	12	40	7
	Vowels--with r	8.	0	23	0	40	0	0	17
CON- TEXT CLUES	Any use of format where child must choose a word to fill a blank.	15-20.	0	51	586	160	120	327	120
WORD STRUC- TURE	Identification of root words	22.	77	60	100	58	0	58	80
	Prefixes--meaning and use	23.	59	108	54	38	0	82	16
	Suffixes--meaning and use	24.	59	227	54	58	83	58	71
	Syllables	26.	39	59	114	38	25	118	65
WORD MEANING	Synonyms	28.	57	16	60	38	0	40	80
	Vocabulary (definitions)	30.	98	833	464	320	53	213	190
	Pronoun reference	31.	20	24	20	0	285	58	25
	Multimeaning words in context	32.	275	76	40	0	285	78	122
	Unfamiliar words in context	33.	295	96	211	40	20	38	70
	Figurative language	34.	176	76	163	60	5	0	122
COMPREHENSION OF TEXT	Understanding event detail	36.	210	188	151	60	287	40	330
	Understanding description	37.	175	3	171	20	285	0	119
	Understanding relationships	38.	158	184	211	96	127	20	38
	Understanding main ideas	39.	154	548	251	641	27	663	267
	Literal recall	40.	592	516	40	160	77	226	210
	Translation of ideas, paraphrase	41.	40	40	111	153	68	36	238
	Synthesis of ideas, inference	42.	120	12	154	142	40	18	162
	Going beyond the text, prediction	43.	99	117	94	200	17	18	35
	Recognizing facts and opinions	44.	191	169	251	98	42	0	51
	General comprehension	45.	714	4	340	527	0	1115	825
APPLICATION	Understanding directions	46.	117	115	37	38	0	98	46
	Reference sources in books (table of contents, index, glossary)	49.	274	8	100	0	80	107	140
	Choosing reference sources (dictionary, encyclopedia, card catalog)	50.	195	92	60	410	40	268	298
	Understanding signs	51.	155	16	20	0	0	36	0
	Understanding letters	52.	116	0	0	0	0	0	0
	Understanding maps	53.	274	12	20	0	20	433	238
GENERAL ACTIVITIES	Oral reading	56.	116	212	271	89	55	573	636
	Silent reading	62.	1006	676	1044	1336	37	513	899
	Spelling (use specific code, if applicable)	58.	1324	227	704	340	495	499	651
	Grammar	59.	472	454	684	433	223	80	288
	Creative writing	60.	780	555	380	207	405	447	205
	Reading in content areas (for science and social studies, use this code only)	61.	627	1274	1044	946	215	1026	791

Table 13

Class Average Allocated Time
Grade 5 Mathematics, A to B

CONTENT	CLASS					
	1	2	3	4	5	6
I WHOLE NUMBERS						
1. Addition	115	38	156	189	96	100
2. Subtraction	200	71	320	145	311	103
3. Multiplication	1379	140	451	149	563	262
4. Division		571		83	145	74
30. Speed tests in addition		37		15		6
31. Speed tests in subtraction		16		15		6
32. Speed tests in multiplication	10	4		49	25	6
33. Speed tests in division		1		49		6
II FRACTIONS AND DECIMALS						
7. Equivalent fractions					21	
8. Addition of fractions		71			10	
9. Subtraction of fractions					10	
10. Addition and subtraction of decimals	88	45	24			
III CONCEPTS AND APPLICATION						
12. Place value: decimals				17		
13. Place value: whole numbers		35		1	18	33
14. Properties		5	21	1		42
15. Factors				8		
16. Perimeter				65		48
17. Area				40		71
18. Volume				39		
19. Lines, angles, etc.				173		22
20. Geometric figures			10	112		22
21. Line and bar graphs				38		13
22. Number pairs		12		42		93
23. Statistics: compute average		75		2		
24. Number patterns		12	9	41		3
26. Word problems: one step	20		39	53	174	18
27. Word problems: two step	20		9	11	117	3
28. Word problems: common measures		7	77	53		1
6, 11, 25, and 29. Other Content		186	12	182		128

Table 14

Class Average Allocated Time
Grade 5 Mathematics, B to C

CONTENT	CLASS				
	2	3	4	5	6
I WHOLE NUMBERS					
1. Addition	200	15	60	28	66
2. Subtraction	122	22	60	79	75
3. Multiplication	329	304	60	667	428
4. Division	396	775	380	148	295
30. Speed tests in addition					135
31. Speed tests in subtraction					135
32. Speed tests in multiplication			199		160
33. Speed tests in division			40		135
II FRACTIONS AND DECIMALS					
7. Equivalent fractions		381	337	451	325
8. Addition of fractions	68	192	396	208	180
9. Subtraction of fractions	43	57	396	165	120
10. Addition and subtraction of decimals	10			8	398
III CONCEPTS AND APPLICATION					
12. Place value: decimals	10				2
13. Place value: whole numbers				24	20
14. Properties					
15. Factors	150		40		39
16. Perimeter	120			20	211
17. Area	20		120	20	249
18. Volume			120		
19. Lines, angles, etc.	170		80		20
20. Geometric figures	100				38
21. Line and bar graphs	60		20		
22. Number pairs	60			20	88
23. Statistics: compute average					44
24. Number patterns		18			
26. Word problems: one step		35		73	45
27. Word problems: two step				102	6
28. Word problems: common measures					
6, 11, 25, and 29. Other Content					

Scale Reactivity

The factors discussed above--growth, ACSTAT, and time--come together in the scale reactivity matrix. Figure 4 shows an example of the scale reactivity matrices reported in Appendix A. Up to now, we have seen several things about subtraction without regrouping--that there are good gains without serious ceiling effects for the middle strata on ACSTAT and that there is considerable variation in the amount of time allocated to instruction in this area. These things and more are apparent in the scale reactivity matrices.

The upper matrix shows data for the A to B period. Each row corresponds to a particular ACSTAT strata. Each column represents a particular interval of allocated time. Within each cell, the numbers indicate mean gain on the subtest and, in parentheses, the number of students on whom the mean is based.

During the A to B period, the pattern for the middle strata is ideal. Students who received little instruction in this area showed little gain. Students who received a lot of instruction in this area showed large gains. On this 16 item test, there was a 50 percent gain for students who received over 250 minutes of instruction.

The pattern from B to C is less encouraging. The highest gain in the middle strata was still for students with the most time, but the rest of the pattern is ragged. This phenomenon of poor B-C reactivity in areas with prior instruction occurred in other places as well. There is no clear explanation. Possibly students were able to capitalize on the build-up of skill during the A to B period in order to show gain with little additional direct instruction between B and C. Note that if this is so, it could help to explain mixed patterns of reactivity in reading, where instruction in some skills tends to go on continuously from grade 1. We don't know the prior pattern of instruction in reading skills.

Item Reactivity

Where scale reactivity is promising, the next step in analysis is to look at item reactivity. The goal is to select items within the subtest which show the greatest gain with instruction. Item reactivity is summarized at the bottom of data page two (see Figure 4). Item data are presented for one strata only, and represent an evaluation and condensation of item reactivity matrices. The column labeled "Gain" gives the mean change for all students in the strata, collapsing across levels of opportunity learn. The column labeled "Reactivity" evaluates the trend in the matrix: a positive pattern of greater gain with greater time is labeled "+," a negative trend of smaller gain with greater time is labeled "-," a flat pattern of equal gain with different amounts of time or a mixed pattern averaging to flat is labeled "F."

Comparison to standard psychometrics. It is important to realize that item selection on the basis of reactivity is a very different process from item selection on the basis of traditional psychometric statistics. The point-biserial correlation between an item and the total subtest score is an index of how well the item discriminates between students. In standard test development, the goal is to maximize this statistic. In reactivity analysis, this is not the case. An item can have a high point-biserial correlation and not be reactive. An item can have a relatively low point-biserial correlation and show a positive pattern of reactivity. Because in the BTES study we will use subtest scores as a dependent measure, it is necessary to have subtests which show reasonable internal consistency. For this reason, each item should correlate positively with the subtest. But given an acceptable level of correlation, decisions about item selection are based on reactivity and not on the size of the correlation.

This concept can be illustrated in connection with the subtraction without regrouping scale. Point-biserial correlations at "B," calculated for the total

tested population, ranged from a low of .31 (item 1) to a high of .74 (item 14). Most correlations were in the .60's. Item 1 has a relatively low correlation, but it consistently contributes to the scale's capacity to show gain with instruction. This item was retained in the final battery, as were all others in a generally favorable situation. If it were necessary to drop items, other items would be dropped before item 1 on the basis of reactivity. Item 8 would probably be the first to go. In a decision based on standard psychometrics, item 1 would be dropped. Thus, the population of test items retained in the battery can be different under the two methods.

A more extended example of item selection is given at the end of the next section. The comparison between reactivity and standard psychometrics becomes clearer in this example.

Fractions Example

The full scope and sequence of the test refinement effort can be illustrated by going through all the steps for one test case--the fractions scales in the grade 5 mathematics battery. Three specific scales were included in the battery:

5M07 - Equivalent Fractions

5M08 - Addition of Fractions

5M09 - Subtraction of Fractions

Each scale had 10 items, shown in Figures 5, 6, and 7. Each scale had a corresponding specific time category in the teacher logs. Little time was spent on fractions in the A-B period, but considerable instruction did occur for some students in the B-C period. The task of reactivity analysis is to determine whether our measures are sensitive indicators of the growth that took place with instruction. The result of the analysis is a decision about whether to keep fractions in the test battery, as specific scales or as one general scale, and which items to include for maximum reactivity.

Specific scale reactivity is graphed in Figures 8, 9, and 10. Each graph shows the mean gain from B to C for students at different levels of entering academic status and with different amounts of opportunity-to-learn. (These graphs are equivalent to the scale reactivity matrices in Appendix A. The graphic form makes the trends more visually apparent.) Each graph shows a clear positive pattern of gain with instruction. The highest gains are made by students who have worked the longest in the area.

It is interesting to consider for a moment the magnitude of the times involved. In each case there was a range of opportunity to learn--from no exposure at all to over 240 minutes of instruction in the specific skill. Some gains began to appear at 120-240 minutes, but impressive gains occurred only when over 240 minutes of instruction had been accumulated. This illustrates the need for substantial amounts of instruction before the relationship between time and learning become apparent. In the more complex analyses of the Instructional Time Study, Charles Fisher also observed and emphasized that "substantial amounts of time and substantial differences in amounts of time were necessary before the relationship could be detected." (Fisher, 1976a, page 137). In many of the skill areas tested, this range of time did not occur, so our measures did not appear reactive to any learning which may have taken place.

Ability differences are also apparent in the graphs, especially in the 240-479 minute category. With equal exposure to instruction, students in the upper strata of entering academic status showed higher gains than students in the middle strata. This pattern fits the model of learning held in the BTES study--that learning is the product of opportunity to learn and ability to take advantage of the opportunity. Analyses in Phase III-B will investigate the contribution to learning of both time and ability.

For purposes of test development, it is encouraging that ability differences show up only in the higher time categories. This suggests that the difference is primarily one of learning rather than skill at figuring out test items.

1 $\frac{1}{2}$ is equivalent to which of these fractions? A. $\frac{2}{3}$ B. $\frac{3}{6}$ C. $\frac{7}{15}$ D. $\frac{2}{5}$	6 Find the value of N. $\frac{2}{7} = \frac{N}{21}$ A. 5 B. 3 C. 6 D. 9
2 $\frac{2}{3}$ is equal to? A. $\frac{3}{9}$ B. $\frac{3}{4}$ C. $\frac{4}{10}$ D. $\frac{8}{12}$	7 $\frac{6}{8}$ is equivalent to A. $\frac{1}{3}$ B. $\frac{2}{6}$ C. $\frac{3}{4}$ D. $\frac{3}{9}$
3 $\frac{2}{5}$ is equal to? A. $\frac{6}{15}$ B. $\frac{4}{12}$ C. $\frac{3}{7}$ D. $\frac{1}{3}$	8 $\frac{8}{24}$ is equivalent to A. $\frac{2}{8}$ B. $\frac{1}{4}$ C. $\frac{4}{6}$ D. $\frac{1}{3}$
4 What does N equal? $\frac{3}{8} = \frac{6}{N}$ A. 12 B. 24 C. 16 D. 11	9 $\frac{5}{30}$ is equivalent to A. $\frac{1}{25}$ B. $\frac{1}{6}$ C. 6 D. $\frac{1}{5}$
5 What does N equal? $\frac{2}{N} = \frac{10}{15}$ A. 3 B. 7 C. 8 D. 12	10 $\frac{12}{16}$ is equivalent to A. $\frac{2}{4}$ B. $\frac{3}{4}$ C. $\frac{3}{8}$ D. $\frac{4}{6}$

Figure 5

Subtest 5M07 - Equivalent Fractions

1 $\frac{3}{7} + \frac{2}{7} = \square$ A. $\frac{1}{7}$ B. $\frac{5}{14}$ C. $\frac{5}{7}$ D. $\frac{7}{14}$	6 $\frac{5}{8} + \frac{6}{8} = \square$ A. $\frac{1}{8}$ B. $1\frac{1}{8}$ C. $\frac{11}{16}$ D. $1\frac{3}{8}$
2 $\frac{2}{3} + \frac{1}{3} = \square$ A. $\frac{1}{3}$ B. $\frac{3}{6}$ C. 1 D. $\frac{3}{9}$	7 $\frac{9}{10} + \frac{8}{10} = \square$ A. $1\frac{7}{10}$ B. $\frac{17}{20}$ C. $1\frac{3}{10}$ D. $\frac{1}{10}$
3 $\frac{2}{3} + \frac{1}{6} = \square$ A. $\frac{5}{6}$ B. $\frac{3}{6}$ C. $\frac{3}{6}$ D. $\frac{3}{18}$	8 $5\frac{1}{6} + \frac{4}{6} = \square$ A. $5\frac{1}{2}$ B. $5\frac{5}{6}$ C. $5\frac{5}{12}$ D. $6\frac{5}{6}$
4 $\frac{3}{5} + \frac{4}{10} = \square$ A. $\frac{9}{10}$ B. 1 C. $\frac{7}{15}$ D. $\frac{4}{5}$	9 $\begin{array}{r} 9\frac{5}{8} \\ + 6\frac{2}{8} \\ \hline \end{array}$ A. $15\frac{3}{16}$ C. $15\frac{7}{8}$ B. $16\frac{7}{8}$ D. $15\frac{7}{16}$
5 $\frac{3}{7} + \frac{5}{7} = \square$ A. $\frac{8}{14}$ B. 1 C. $\frac{4}{7}$ D. $1\frac{1}{7}$	10 $\begin{array}{r} 8\frac{1}{2} \\ + 2\frac{3}{6} \\ \hline \end{array}$ A. 11 C. $10\frac{7}{8}$ B. $10\frac{1}{2}$ D. 10

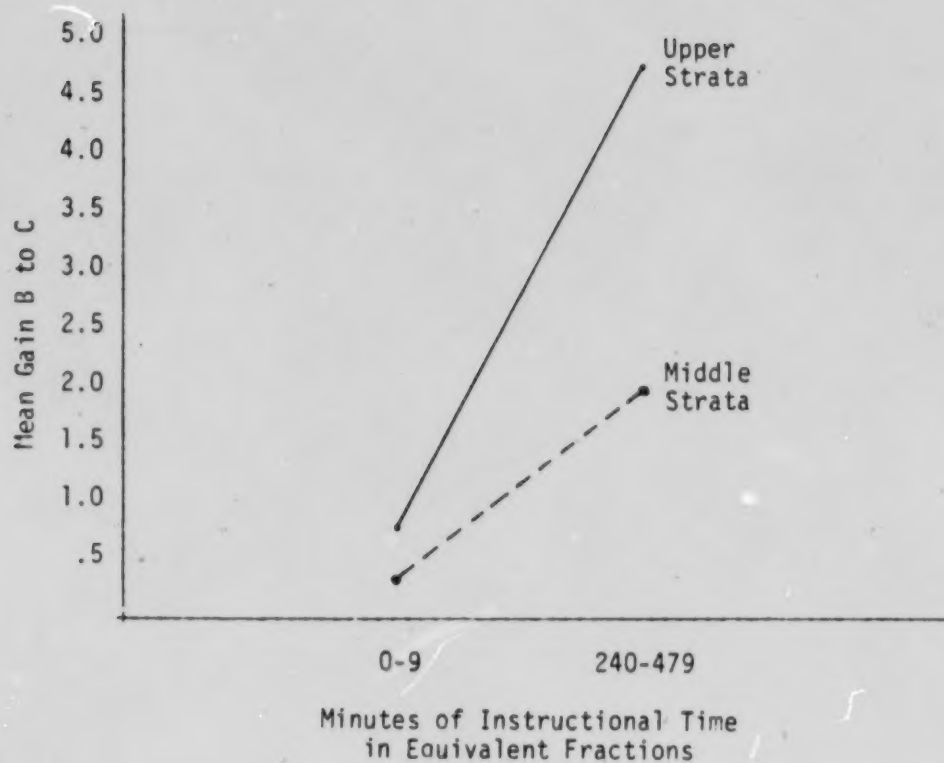
Figure 6

Subtest 5M08 - Addition of Fractions

1 $\frac{5}{8} - \frac{3}{8} = \square$ A. $\frac{1}{8}$ B. 2 C. $\frac{2}{16}$ D. $\frac{2}{8}$	6 $8\frac{1}{3} - \frac{1}{3} = \square$ A. $7\frac{1}{3}$ B. $7\frac{2}{6}$ C. $8\frac{1}{5}$ D. 8
2 $13 - \frac{3}{8} = \square$ A. $12\frac{1}{4}$ B. $13\frac{5}{8}$ C. $12\frac{5}{8}$ D. $12\frac{7}{8}$	7 $5\frac{5}{8} - 4\frac{4}{8} = \square$ A. $1\frac{1}{8}$ B. $1\frac{1}{16}$ C. $1\frac{1}{4}$ D. $\frac{1}{8}$
3 $5 - \frac{1}{4} = \square$ A. $4\frac{3}{4}$ B. $5\frac{1}{4}$ C. 4 D. $3\frac{3}{4}$	8 $7\frac{1}{2} - \frac{2}{5} = \square$ A. $6\frac{1}{10}$ B. $7\frac{1}{10}$ C. $6\frac{3}{7}$ D. $7\frac{1}{5}$
4 $\frac{10}{12} - \frac{5}{12} = \square$ A. $\frac{2}{7}$ B. $\frac{7}{12}$ C. $\frac{5}{24}$ D. $\frac{5}{12}$	9 $8\frac{7}{9} - 3\frac{2}{9} = \square$ A. $4\frac{5}{9}$ B. $5\frac{5}{9}$ C. $5\frac{5}{18}$ D. $4\frac{10}{18}$
5 $16 - \frac{3}{9} = \square$ A. $15\frac{1}{9}$ B. $15\frac{6}{9}$ C. $14\frac{9}{12}$ D. $16\frac{6}{9}$	10 $9\frac{5}{6} - 2\frac{5}{12} = \square$ A. $7\frac{5}{18}$ B. $6\frac{5}{12}$ C. $7\frac{5}{12}$ D. 6

Figure 7

Subtest 5M09 - Subtraction of Fractions

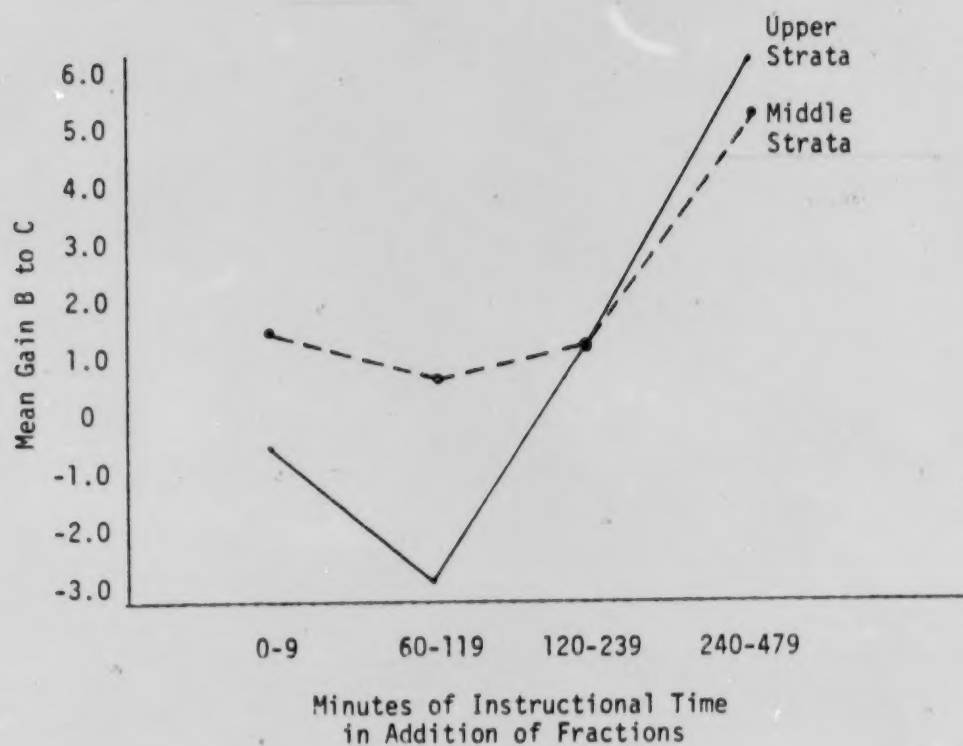


The number of students in each group is as follows:

	0-9	240-479
Upper	n=10	n=21
Middle	n= 8	n=34

Figure 8

Scale Reactivity -- Equivalent Fractions

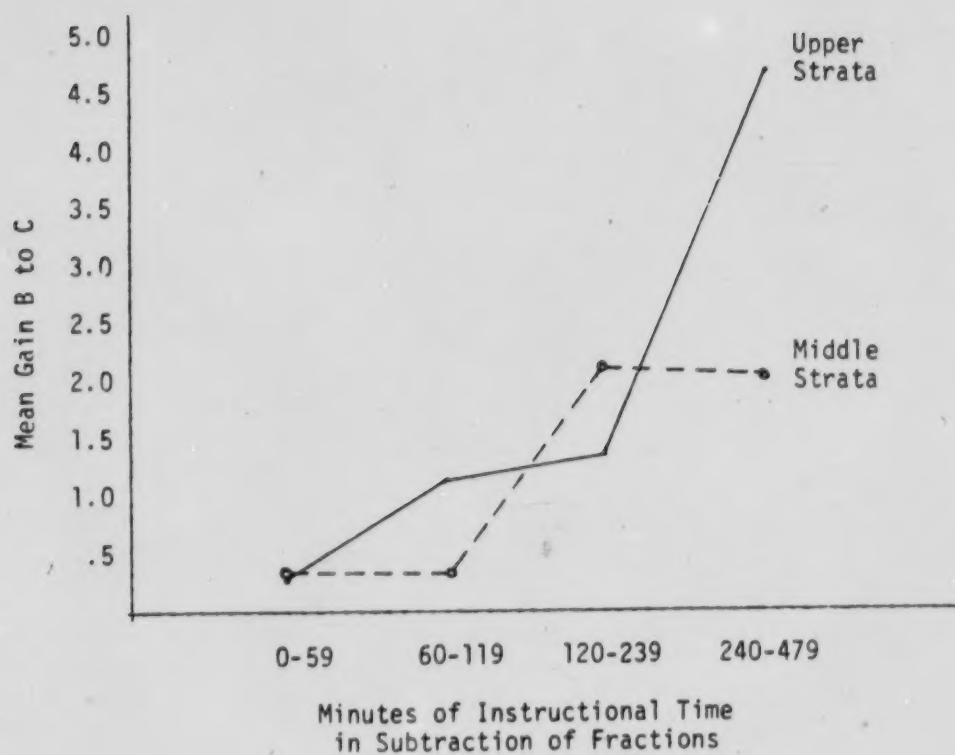


The number of students in each group is as follows:

	0-9	60-119	120-239	240-479
Upper	n=3	n=3	n=16	n=10
Middle	n=6	n=2	n=26	n=8

Figure 9

Scale Reactivity -- Addition of Fractions



The number of students in each group is as follows:

	0-59	60-119	120-239	240-479
Upper	n=5	n=11	n=8	n=10
Middle	n=8	n=11	n=16	n=7

Figure 10

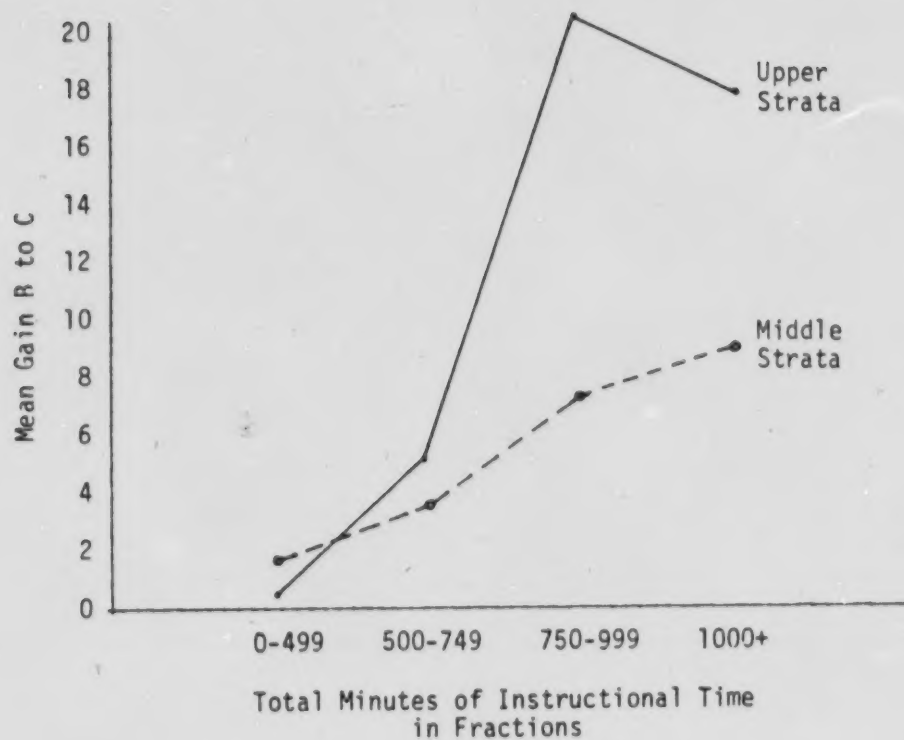
Scale Reactivity -- Subtraction of Fractions

High ability students were not able to take a little instruction and parlay it into a big gain through superior test taking skill. The test items appear to be good, straight-forward indicators of knowledge about computation with fractions.

All signs are positive, then, for the inclusion of fractions in the final test battery. Three specific scales could be retained, but we are looking for places to collapse scales to a more general level. The advantages of simplification are many--for teacher logs, for testing, for ease of analysis and interpretation, the number of different categories is a critical factor. But we would like to know that the combined scale has favorable characteristics as a measure of achievement in the combined time category. Total gain in fractions in relationship to total time is shown in Figure 11. This graph shows a more linear relationship between gain and time than the parts do individually. This may be because the number of items is larger and therefore scores are more stable. It may be because total time is more reliable than assignment to a specific skill area. It may be because instruction transfers from one area of computation with fractions to another. At any rate, the best bet for the Phase III-B battery would seem to be a total fractions scale.

In order to decide which items to put in the fractions scale, reactivity analyses were carried out for individual items. Considering testing time, we wanted to reduce the number of items. Also, it seemed unlikely that all items were equally appropriate and reactive to instruction. The test as a whole could be made shorter and proportionally more reactive by selecting only the most reactive items for the III-B fractions scale.

Item reactivity is shown in Tables 15, 16, and 17. These data are for middle strata students only. As discussed previously, Phase III-B will involve the selection of target students within a restricted range of entering academic status. These target students are most likely to resemble students in the middle strata; therefore, we want to select items which are particularly reactive for



The number of students in each group is as follows:

	0-499	500-749	750-999	1000+
Upper	n=10	n=11	n=2	n=9
Middle	n= 8	n=16	n=9	n=7

Figure 11

Combined Scale Reactivity -- Fractions

this group. (Since gains were smaller for the middle group, it is possible that fewer items will be reactive for this group. Any items that are selected will do as well or better for upper strata students.)

Table 15 shows item data for the equivalent fractions subtest. Item numbers correspond to the numbers in Figure 5. What we want to find are items which show the greatest gain with instruction. Numbers in the 240+ column should be high; numbers in the 0-10 column should be low. This pattern is referred to as a "positive" reactivity pattern. The column labeled "Reactivity Pattern" evaluates and summarizes the reactivity of each item. Pattern evaluation like this is reported in the data summaries in Appendix A. Actual decisions were based on the size of the gain at different time levels as well as overall patterns. Based on these factors, items 1, 2, 4, 6, and 7 were selected for inclusion in the fractions scale for Phase III-B.

These item reactivity tables also show the point-biserial correlation between each item and the total score on the subtest.¹ As discussed earlier, this standard psychometric statistic estimates discrimination between students and thus yields very different information from an analysis of reactivity. In these fractions scales, all items have moderate to high correlations with their subtests, but not all items show good reactivity. Items 8 and 10 in the equivalent fractions scale (Table 15) illustrate this point. Item 10 is particularly interesting. It shows relatively low gain with instruction and a higher gain without instruction. This item detracts from a measure of achievement based on school learning. Standard item statistics would not reveal this fact. By going

1 Point-biserial correlations are based on the whole population of students tested, while other data are for middle strata students only. This change in sample might have slight effects on the absolute value of the correlation. It is unlikely to change the interpretations offered here.

Table 15
Item Reactivity--Equivalent Fractions
(Middle Strata)

Item Number	Proportion Correct at B	Gain B to C		Reactivity Pattern	Point-biserial Correlation with Subtest (at C)
		0-10 minutes (n=8)	240+ minutes (n=34)		
1*	.12	.00	.26	+	.65
2*	.05	-.13	.24	+	.71
3	.17	.00	.18	+	.63
4*	.05	.00	.35	+	.57
5	.07	.25	.29	F	.65
6*	.14	.13	.26	+	.62
7*	.10	-.13	.21	+	.64
8	.10	.00	-.06	-	.48
9	.17	-.13	.09	+	.50
10	.07	.50	.15	-	.57

* These items will be included in the fractions scale in the Phase III-B test battery.

Table 16
Item Reactivity--Addition of Fractions
(Middle Strata)

Item Number	Proportion Correct at B	Gain B to C			Reactivity Pattern	Point-biserial Correlation with Subtest (at C)
		0-119 minutes (n=8)	120-239 minutes (n=26)	240+ minutes (n=8)		
1*	.24	.13	.19	.75	+	.64
2*	.10	.25	.23	.88	+	.73
3	.02	.00	-.04	.13	+	.49
4	.00	.00	.04	.25	+	.53
5*	.02	.00	.12	.38	+	.75
6	.00	.00	.04	.13	+	.73
7	.05	.25	.08	.50	+	.74
8*	.07	.13	.12	.63	+	.74
9*	.12	.13	.19	.63	+	.73
10	.12	.13	-.08	.13	F	.43

* These items will be included in the fractions scale in the Phase III-B test battery.

Table 17
Item Reactivity--Subtraction of Fractions
(Middle Strata)

Item Number	Proportion Correct at B	Gain B to C		Reactivity Pattern	Point-biserial Correlation with Subtest (at C)
		0-119 minutes (n=19)	240+ minutes (n=23)		
1*	.33	.21	.52	+	.68
2	.19	-.11	.04	+	.57
3	.12	.11	-.09	-	.61
4*	.44	.00	.39	+	.66
5	.14	.05	.04	F	.37
6*	.33	.00	.26	+	.67
7*	.33	.11	.30	+	.73
8	.16	.00	-.13	-	.43
9*	.40	-.16	.39	+	.68
10	.19	-.05	.26	+	.56

* These items will be included in the fractions in the Phase III-B test battery.

beyond standard statistics and eliminating non-reactive items, we are able to construct a test which is a more sensitive measure of learning from instruction. This is the whole point of the reactivity analysis.

THE FINAL TEST BATTERY

The year's experience with the pilot test battery provided a rich source of data for improving BTES student achievement testing. Reactivity analyses allowed us to identify measures which are appropriate and sensitive indicators of classroom learning. Consultant review, individual testing, experience with curriculum materials, and discussion with teachers introduced new ways of testing reading and mathematics skills and suggested improvements in test format and terminology. The product of the year's study is a streamlined battery of tests representing the best measures in the pilot battery designed to measure important skills taught in reading and mathematics at grade 2 or 5.

The tests in the BTES battery for Phase III-B are listed in Tables 18 to 21. Subtests are described at the level of aggregation which will be used for primary analyses. Except for noted exceptions, teachers will keep records of instructional time in categories that correspond to these subtests. For instance, addition and subtraction without regrouping are a single category in the teacher logs for grade 2 mathematics. Listed under each subtest are component parts of the subtest. Since these components often correspond to subtests in the pilot battery, listing them facilitates comparison between the pilot battery and the final battery.

Where subtests in the pilot battery were combined in the final battery, reactivity analyses were carried out for the combined scale. The fractions example described earlier illustrates this process.

Notice that not all subtests will be given at all testing occasions. A continuing concern in testing, especially at grade 2, is to reduce test time and humanize the testing process. One way to do this is to avoid testing students on material they have not covered and do not know. Teacher reports on instructional time and data on item difficulty indicated that some subtests are most

appropriate during the B to C period (for instance, fractions in grade 5 mathematics). Since plans for Phase III-B call for a repetition of the ABC testing plan, with a delayed posttest the next fall, labeled "D," the decision was made to eliminate from early testing occasions subtests which would be too difficult at that time.

Details of subtest revision are noted in Appendix A. For each scale, comments are made about item selection, revision, or replacement. Attention is called to reactivity data, individual testing, or other sources of input that led to specific revisions. We feel that the year's study was extremely profitable. The BTES student achievement test battery for Phase III-B will be one which is well matched to classroom learning.

Table 18
Subtests in the Phase III-B Test Battery
(Grade 2 Reading)

Scale Title	Components from Pilot Battery Name	Number	Number of Items	Testing Occasion
Decoding Consonant Blends & Digraphs		2R01B	12	ABCD
Decoding Variant Consonants		2R03	14	ABCD
Decoding Long Vowels			20	ABCD
	Final "e"	2R04	10	
	Digraph	2R05	10	
Decoding Complex Patterns		2R08	16	ABCD
Compound Words		2R17	8	ABCD
Root Words & Affixes			17	ABCD
	Word Division	2R18	9	
	Context Clues - Form of Word	2R14	8	
Syllables		2R19	10	ABCD
Synonyms		2R22	16	ABCD
Pronoun Reference		2R25	10	ABCD
Comprehension ¹			23	BCD
	Events	2R31 + 2R32	11	
	Relationships	2R33	6	
	Main Idea	2R34	6	

¹ Within the Comprehension category, teachers will record time at the specific level--events, relationships, main idea. Some analyses will be done at this level, especially for Events.

Table 19
Subtests in Phase III-B Test Battery
(Grade 2 Mathematics)

Scale Title	Components from Pilot Battery Name	Number	Number of Items	Testing Occasions
Addition & Subtraction without Regrouping			32 ¹	ABCD
	Addition	2M01	16	
	Subtraction	2M03	16	
Speed Tests in Addition & Subtraction			28	ABCD
	Addition	2M06	14	
	Subtraction	2M07	14	
Addition with Regrouping ²		2M02	10	BCD
Subtraction with Regrouping ²		2M04	10	CD
Place Value/ Numerals			25	ABCD
	Place Value	2M13	15	
	Numerals	2M12A	10	
Computational Transfer			22	ABCD
	Properties	2M15	6	
	Missing Addends	2M25	4	
	Number Sentences with Equalities and Inequalities	2M08	6	
	Number Patterns	2M10	6	
Money		2M17	10	ABCD
Linear Measurement		2M18	11	ABCD
Fractions		2M14	10 ³	CD
Word Problems		2M22	15	ABCD

¹An additional 8 items were given at "A" to provide a more stable estimate of entering skill in an area that students are familiar with. Thirty-two items are carried across all four occasions.

²Addition and subtraction with regrouping will be analyzed separately in some analyses but the teacher logs combine the two categories.

³Four items from the fractions scale will be given at "B" to provide some estimate of status entering the B-C period.

Table 20
Subtests in the Phase III-B Test Battery
(Grade 5 Reading)

Scale Title	Components from Pilot Battery Name	Battery Number	Number of Items	Testing Occasion
Syllables			21	ABCD
	First Syllable	5R11	14	
	Last Syllable	5R12	7	
Root Words & Affixes			15	ABCD
	Prefix & Suffix			
	Meaning	5R16	9	
	Context Clues - Form of Word	5R06	6	
Synonyms		5R15	15	ABCD
Pronouns			16	ABCD
	Pronoun Reference	5R19	8	
	Context Clues - Pronouns	5R07	8	
Word Meaning in Context			20	ABCD
	Multimeaning Words	5R17	7	
	Unfamiliar Words	5R18	7	
	Figurative Language	5R20	6	
Literal Comprehension			14	ABCD
	Literal Recall	5R22		
	Translation	5R23		
Inferential Comprehension			9	ABCD
	Synthesis	5R24		
	Extrapolation	5R25		
Comprehension of Main Idea		5R29	9	ABCD
Topic Sentence		5R35	10	ABCD
Evaluation of Fact & Opinion		5R30	10	ABCD

Table 21
Subtests in the Phase III-B Test Battery
(Grade 5 Mathematics)

Scale Title	Components from Pilot Battery Name	Battery Number	Number of Items	Testing Occasions
Addition & Subtraction			10	ABCD
	Addition	5M01	5	
	Subtraction	5M02	5	
Multiplication		5M03	20	ABCD
Speed Test in Multiplication			14	ABCD
Division		5M04	15	BCD
Fractions			15	BCD
	Equivalent Fractions	5M07	5	
	Addition of Fractions	5M08	5	
	Subtraction of Fractions	5M09	5	
Place Value/ Numerals		5M12B	10	ABCD
Computational Transfer			26	ABCD
	Properties	5M13	10	
	Factors	5M14	8	
	Number Patterns	5M24	8	
Geometry			22	ABCD
	Perimeter	5M16	5	
	Area	5M17	5	
	Lines	5M19	3	
	Figures	5M20	3	
	Number Pairs	5M23	6	
Word Problems			12	ABCD
	One-step	5M26A	2	
	Two-step	5M26B	5	
	Averages	5M27	1	
	Common Measures	5M28	4	

References

References

Filby, N. Progress report on reactivity analyses (October-December test data) (Technical Note III-5, Beginning Teacher Evaluation Study). San Francisco: Far West Laboratory, 1976.

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Fisher, C. A study of instructional time in grade 2 mathematics (Technical Report II-3, Beginning Teacher Evaluation Study). San Francisco: Far West Laboratory, 1976 (a).

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APPENDIX A

Summary Data for Subtests

Grade 2 Reading	A-1
Grade 2 Mathematics	A-66
Grade 5 Reading	A-113
Grade 5 Mathematics	A-172

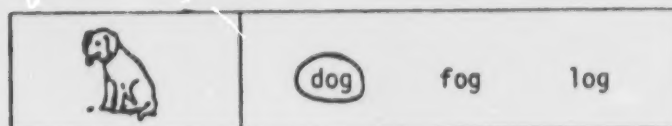
GRADE 2 READING

Sample Sizes:

	Test Occasion		
	A	B	C
TOTAL SAMPLE	150*	149	139
UPPER MIDDLE STRATA	40	40	36
LOWER MIDDLE STRATA	46	46	38

* All figures represent the total number of students tested. On any one subtest, missing data could reduce the number of students contributing.

Grade 2 Reading 2R01A

Scale Name: Decoding Single ConsonantsDescription: The student must identify the word containing the correct consonant sounds to name a picture. Includes single consonants in initial and final position.Example:Number of Items: 5Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	4.55	4.61	4.73
SAMPLE	Standard Deviation	1.05	.99	.76
	Mean Proportion Correct	.91	.92	.95
	Coefficient Alpha	.59	.58	.41
	Standard Error of Measurement	.60	.58	.52
UPPER	Mean	4.57	4.92	4.87
MIDDLE	Standard Deviation	.97	.34	.43
STRATA	Proportion near Ceiling	.79	.95	.91
LOWER	Mean	4.70	4.33	4.72
MIDDLE	Standard Deviation	.68	1.21	.69
STRATA	Proportion near Ceiling	.85	.72	.84

Revisions:

Deleted from final battery due to high scores.

Grade 2 Reading

2R01B

Scale Name:

Decoding Consonant Blends and Digraphs

Description:

The student must identify the word containing the correct consonant sounds to name a picture. Includes consonant digraphs and blends in initial and final position.

Example:

	three see <u>tree</u>
	sink <u>sing</u> sick

Number of Items: 9Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	6.45	6.69	7.37
SAMPLE	Standard Deviation	2.40	2.53	2.21
	Mean Proportion Correct	.72	.74	.82
	Coefficient Alpha	.58	.68	.66
	Standard Error of Measurement	1.46	1.36	1.21
UPPER	Mean	7.09	7.18	8.24
MIDDLE	Standard Deviation	1.85	1.81	1.11
STRATA	Proportion near Ceiling	.61	.59	.91
LOWER	Mean	5.83	6.08	6.97
MIDDLE	Standard Deviation	1.97	2.22	2.07
STRATA	Proportion near Ceiling	.32	.46	.68

Revisions:

Items 2, 3, 5, 8 and 9 were retained as reactive items. Seven items were taken from the speed test to form a 12 item power test of blends and digraphs. Items from this scale and the Long Vowel scale will be randomly mixed during test administration in order to make items more difficult.

2R01B
Scale Reactivity

A to B					
UPPER MIDDLE	-1.50 [*] (2)	-0.25 (14)	-0.60 (5)	0.50 (11)	
	LOWER MIDDLE	-0.90 (5)	0.75 (16)	0.60 (5)	0.13 (2)
		0-10	11-60	61-120	over 120
		Minutes in Consonant Blends			

* Mean Change
(n)

(ii)

		B to C			
UPPER MIDDLE		1.04 (12)		0.92 (18)	1.87 (4)
		1.13 (4)	3.17 (6)	0.22 (23)	1.88 (4)
LOWER MIDDLE					
		0-60	61-120	121-240	over 240
		Minutes in Consonant Blends			

Item Reactivity (Upper Middle Strata)

Item #	Proportion Correct at A	A to B		B to C	
		Gain	Reactivity	Gain	Reactivity
1	.95	.03	+	.00	F
2	.65	.09	+	.15	+
3	.92	.03	+	.03	+
4	.95	.00	-	.05	-
5	.80	.11	+	.03	+
6	.97	.03	-	.00	F
7	.82	-.06	-	.21	-
8	.70	-.14	+	.18	F
9	.97	-.03	F	.06	+

Grade 2 Reading 2R02A

Scale Name: Decoding Single ConsonantsDescription: Speed Test (1 minute - combined with 2R02B)Example:

See 2R01A

Number of Items: 5Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	3.72	4.31	4.55
SAMPLE	Standard Deviation	1.47	1.31	1.05
	Mean Proportion Correct	.75	.86	.91
	Coefficient Alpha	.66	.70	.67
	Standard Error of Measurement	.76	.64	.53
UPPER	Mean	4.21	4.66	4.94
MIDDLE	Standard Deviation	.91	.53	.23
STRATA	Proportion near Ceiling	.82	.94	1.00
LOWER	Mean	3.32	4.28	4.54
MIDDLE	Standard Deviation	1.20	.98	.94
STRATA	Proportion near Ceiling	.44	.78	.89

Revisions:

Deleted from final battery due to high scores.

Grade 2 Reading 2R02B

Scale Name: Decoding Consonant Blends and DigraphsDescription: Speed Test (1 minute - combined with 2R02A)Example:

See 2R01 B

Number of Items: 19Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	6.93	10.09	12.46
SAMPLE	Standard Deviation	6.07	6.66	6.23
	Mean Proportion Correct	.36	.53	.66
	Coefficient Alpha	.89	.89	.91
	Standard Error of Measurement	1.96	2.11	1.85
UPPER	Mean	8.12	12.57	15.54
MIDDLE	Standard Deviation	4.31	4.31	3.97
STRATA	Proportion near Ceiling	.05	.32	.64
LOWER	Mean	3.07	6.53	10.00
MIDDLE	Standard Deviation	3.11	4.52	4.99
STRATA	Proportion near Ceiling	.00	.05	.14

Revisions:

This speed test showed good gain through the year, but the gains could not be related to any specific time categories. Time in blends did not show any better pattern than that for automaticity (next page). The speed test format was dropped from the final battery. Seven items were moved to the power test.

2R02B
Scale Reactivity

A to B

UPPER MIDDLE	4.09 (19) *	7.25 (2)	4.20 (10)
LOWER MIDDLE	3.95 (10)	0.13 (8)	5.00 (16)

0-60

61-120

over 120

Minutes
 in Automaticity of Decoding

* Mean Change
 (n)

B to C

UPPER MIDDLE	3.11 (28)		0.00 (5)
LOWER MIDDLE	2.90 (20)	6.00 (5)	1.64 (7)

0-60

61-120

over 120

Minutes
 in Automaticity

Grade 2 Reading

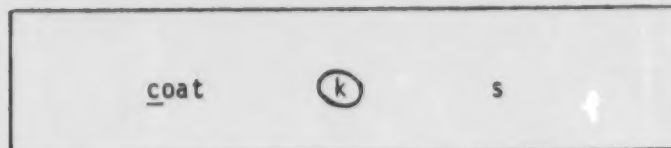
2R03

Scale Name:

Decoding Variant Consonants

Description:

The student must identify the appropriate sound of the letter "c" in a word.

Example:Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	3.12	4.59	6.41
SAMPLE	Standard Deviation	4.00	3.88	3.61
	Mean Proportion Correct	.31	.46	.64
	Coefficient Alpha	.70	.67	.70
	Standard Error of Measurement	2.06	2.11	1.88
UPPER	Mean	3.00	5.51	7.03
MIDDLE	Standard Deviation	2.69	2.73	2.86
STRATA	Proportion near Ceiling	.10	.29	.64
LOWER	Mean	1.13	2.53	5.44
MIDDLE	Standard Deviation	2.17	2.96	3.69
STRATA	Proportion near Ceiling	.02	.08	.39

Revisions:

Items 2, 3, 4, 6, 9, and 10 were retained. Eight new items were added following the pattern of reactive items. (Since "cent", item 3, was reactive, "ceiling" was added. "Face", item 9, led to the inclusion of "dancer".)

2R03
Scale Reactivity

A to B			
UPPER MIDDLE	2.31 [*] (13)	2.64 (14)	2.75 (4)
LOWER MIDDLE	1.68 (25)	-0.40 (5)	2.00 (4)
	0-10	11-60	61-120
	Minutes in Variant Consonants		

* Mean Change
(n)

B to C				
UPPER MIDDLE	1.00 (10)	1.36 (11)	2.40 (10)	0.00 (2)
LOWER MIDDLE	2.30 (10)	2.75 (8)	2.60 (5)	3.44 (9)
	0-10	11-60	61-120	121-360
	Minutes in Variant Consonants			

Item Reactivity (Lower Middle Strata)

Item #	Proportion Correct at B	B Gain	to C Reactivity
1	.88	.09	+
2	.64	.25	+
3	.24	.25	+
4	.48	.09	F
5	**	.06	-
6	**	.19	F
7	**	.03	-
8	**	.25	-
9	.39	.41	+
10	.30	.31	+

** Data unavailable

Grade 2 Reading

2R04

Scale Name:

Decoding Vowels - Long Vowel, Final "e"

Description:

The student must recognize the role of final "e" in vowel pronunciation by selecting the correct word to name a picture.

Example:

	rop <u>rope</u> rap
	blick bloke <u>block</u>

Number of Items:

12

Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	6.70	7.84	8.90
SAMPLE	Standard Deviation	3.94	3.67	3.48
	Mean Proportion Correct	.56	.65	.74
	Coefficient Alpha	.75	.76	.78
	Standard Error of Measurement	1.88	1.74	1.56
UPPER	Mean	8.09	9.41	10.71
MIDDLE	Standard Deviation	2.57	2.36	1.27
STRATA	Proportion near Ceiling	.34	.54	.77
LOWER	Mean	4.28	6.01	7.74
MIDDLE	Standard Deviation	2.47	2.66	3.03
STRATA	Proportion near Ceiling	.00	.09	.27

Revisions:

Items 2, 7, 8, 9, and 12 were dropped. Three promising items were added from the observation test used in the Instructional Time Study (see Technical Report II-3). These 10 items will be combined with 10 items from 2R05, digraphs, to form a Long Vowel scale in the final test battery.

2R04
Scale Reactivity

A to B

UPPER MIDDLE	1.70 (5)	1.65 (10)	1.50 (13)	1.07 (7)
LOWER MIDDLE	1.75 (12)	0.38 (4)	2.18 (20)	1.30 (5)
	0-60	61-120	121-240	over 240
	Minutes in Long Vowels			

* Mean Change
(n)

B to C

UPPER MIDDLE	0.30 (5)	1.36 (11)	4.00 (3)	1.00 (15)
LOWER MIDDLE	4.00 (6)	0.77 (15)	1.07 (7)	1.63 (8)
	11-120	121-240	241-360	over 360
	Minutes in Long Vowels			

Item Reactivity (Upper Middle Strata)

Item #	Proportion Correct at A	A to B		B to C	
		Gain	Reactivity	Gain	Reactivity
1	.85	.05	+	.03	F
2	.97	.03	-	.00	F
3	.88	.11	F	-.06	F
4	.57	.24	+	.15	+
5	.85	-.03	F	.03	+
6	.72	.11	+	.09	+
7	1.00	-.03	F	.03	+
8	.77	.11	F	.09	+
9	.90	.00	-	.06	+
10	.47	.19	-	.26	+
11	.42	.08	+	.18	F
12	.90	.00	+	.06	-

Grade 2 Reading

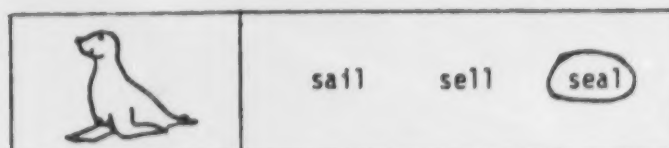
2R05

Scale Name:

Decoding Vowels - Digraphs

Description:

The student must recognize the long vowel sound of common digraphs.

Example:Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	4.44	5.58	6.90
SAMPLE	Standard Deviation	4.02	4.00	3.52
	Mean Proportion Correct	.44	.56	.69
	Coefficient Alpha	.81	.82	.81
	Standard Error of Measurement	1.68	1.60	1.45
UPPER	Mean	6.17	7.65	8.97
MIDDLE	Standard Deviation	2.11	2.28	1.58
STRATA	Proportion near Ceiling	.21	.57	.83
LOWER	Mean	1.11	2.88	5.34
MIDDLE	Standard Deviation	2.10	3.21	2.91
STRATA	Proportion near Ceiling	.00	.11	.30

Revisions:

Items 4, 9, and 10 were replaced with items from the observation test. Ten digraph items will be part of the Long Vowel scale.

2R05
Scale Reactivity

A to B

UPPER MIDDLE	0.10 (5) *	1.95 (10)	1.69 (13)	1.50 (7)
LOWER MIDDLE	1.54 (12)	3.00 (4)	1.38 (20)	4.40 (5)
	0-60	61-120	121-240	over 240
	Minutes in Long Vowels			

* Mean Change
 (n)

B to C

UPPER MIDDLE	1.80 (5)	0.82 (11)	3.50 (3)	0.80 (15)
LOWER MIDDLE	5.79 (7)	1.70 (15)	2.14 (7)	1.19 (8)
	11-120	121-240	241-360	over 360

Minutes
 in Long Vowels

Item Reactivity (Upper Middle Strata)

Item #	Proportion Correct at A	A to B		B to C	
		Gain	Reactivity	Gain	Reactivity
1	.57	.09	+	.18	F
2	.82	.11	F	.06	F
3	.45	.26	+	.12	F
4	.97	.03	F	.00	F
5	.63	.14	+	.18	F
6	.55	.17	+	.12	-
7	1.00	.00	F	.00	F
8	.52	.09	-	.09	-
9	.90	.10	+	.00	F
10	.90	.03	-	.06	+

Grade 2 Reading

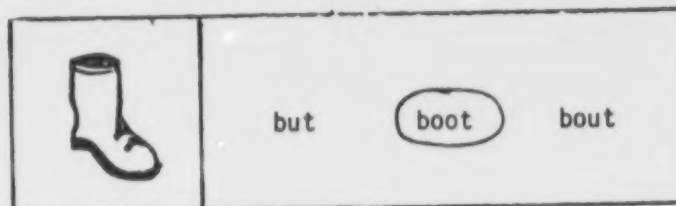
2R06

Scale Name:

Decoding Vowels - Diphthongs

Description:

The student must recognize the sounds of common vowel diphthongs.

Example:Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	5.63	6.51	7.54
SAMPLE	Standard Deviation	3.34	3.02	2.78
	Mean Proportion Correct	.56	.65	.75
	Coefficient Alpha	.76	.68	.74
	Standard Error of Measurement	1.56	1.61	1.35
UPPER	Mean	6.86	7.18	8.76
MIDDLE	Standard Deviation	2.03	2.30	1.34
STRATA	Proportion near Ceiling	.29	.49	.80
LOWER	Mean	3.85	4.89	6.64
MIDDLE	Standard Deviation	2.69	2.35	2.49
STRATA	Proportion near Ceiling	.07	.15	.41

Revisions:

Deleted from final battery due to relatively low amounts of instructional time and to poor reactivity.

2R06
Scale Reactivity

A to B

UPPER
MIDDLE

0.63 *
(19)

-0.77
(11)

0.00
(2)

LOWER
MIDDLE

1.65
(20)

1.17
(12)

-1.50
(2)

0-10

11-60

61-120

Minutes
in Diphthongs

* Mean Change
(n)

B to C

UPPER
MIDDLE

2.21
(14)

0.67
(9)

1.36
(11)

LOWER
MIDDLE

2.17
(6)

1.79
(21)

1.66
(9)

0-10

11-60

61-120

over 120

Minutes
in Diphthongs

Grade 2 Reading

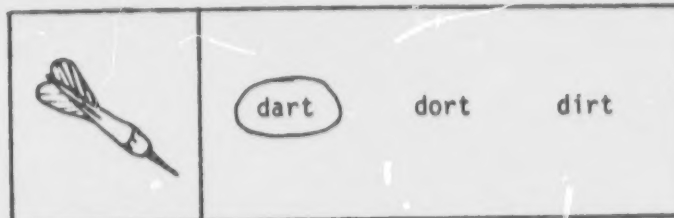
2R07

Scale Name:

Decoding Vowels with "r".

Description:

The student must recognize the sounds of vowels when modified by an "r" following the vowel.

Example:Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	4.07	5.16	6.45
SAMPLE	Standard Deviation	3.58	3.72	3.52
	Mean Proportion Correct	.41	.52	.65
	Coefficient Alpha	.76	.75	.79
	Standard Error of Measurement	1.68	1.76	1.54
UPPER	Mean	4.93	6.46	7.96
MIDDLE	Standard Deviation	2.57	2.27	2.10
STRATA	Proportion near Ceiling	.21	.30	.63
LOWER	Mean	1.23	2.67	5.50
MIDDLE	Standard Deviation	1.79	2.74	2.93
STRATA	Proportion near Ceiling	.00	.02	.19

Revisions:

Deleted from final battery due to relatively low amounts of instructional time and to poor reactivity.

2R07
Scale Reactivity

A to B

UPPER MIDDLE	1.86 (14) *	1.23 (11)	2.36 (7)
LOWER MIDDLE	1.81 (18)	1.88 (12)	0.38 (4)

0-10

11-60

61-120

Minutes
 in Vowel with "r"

* Mean Change
 (n)

B to C

UPPER MIDDLE	1.37 (15)	1.44 (18)	
LOWER MIDDLE	2.50 (16)	2.53 (16)	2.70 (5)

0-10

11-60

over 120

Minutes
 in Vowel with "r"

Grade 2 Reading

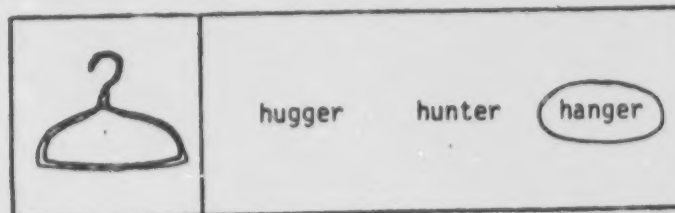
2R08

Scale Name:

Decoding - Complex, Multisyllabic

Description:

The student must identify the word containing the correct combination of internal sounds to name a picture. Requires careful word reading and integration of decoding skills.

Example:Number of Items:

10

Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	2.90	4.03	5.93
SAMPLE	Standard Deviation	3.47	3.60	3.50
	Mean Proportion Correct	.29	.40	.59
	Coefficient Alpha	.75	.69	.73
	Standard Error of Measurement	1.64	1.90	1.72
UPPER	Mean	2.58	4.51	6.96
MIDDLE	Standard Deviation	2.65	2.61	3.03
STRATA	Proportion near Ceiling	.05	.08	.54
LOWER	Mean	.73	2.10	4.42
MIDDLE	Standard Deviation	1.60	2.19	3.02
STRATA	Proportion near Ceiling	.00	.00	.19

Revisions:

This scale was expanded for use in IIIB. Item 8 was dropped as too easy. Seven new items were written. All items were made 4-choice items to reduce ceiling effects at C.

2R08

Scale Reactivity

A to B

UPPER MIDDLE	1.44 * (16)	-0.08 (6)	3.14 (7)	3.33 (6)
LOWER MIDDLE	-0.90 (5)	0.33 (6)	2.17 (15)	1.53 (15)
	11-60	61-120	121-240	over 240

Minutes
in Reading Words
(no specific decoding focus)

* Mean Change
(n)

B to C

UPPER MIDDLE	2.18 (17)	3.64 (11)		0.30 (5)
LOWER MIDDLE	3.75 (4)	2.69 (13)	3.19 (8)	0.09 (12)
	0-120	121-240	241-360	over 360

Minutes
in Reading Words

Item Reactivity (Upper Middle Strata)

Item #	Proportion Correct at A	A Gain	to B Reactivity
1	.42	.03	+
2	.32	.29	-
3	.52	.06	+
4	.27	.29	+
5	.22	.46	+
6	.35	.20	+
7	.55	.06	+
8	.80	.14	+
9	.45	.23	+
10	.50	.03	+

Grade 2 Reading 2R09

Scale Name: Decoding - Consonant SubstitutionDescription: The student must select the correct consonant blend or digraph to substitute in initial position and make a new real word.Example:

hop	.		
__op	dr	tw	sk

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	2.50	4.02	5.81
SAMPLE	Standard Deviation	3.47	3.81	3.71
	Mean Proportion Correct	.25	.40	.58
	Coefficient Alpha	.75	.75	.80
	Standard Error of Measurement	1.64	1.82	1.53
UPPER	Mean	3.00	4.20	6.94
MIDDLE	Standard Deviation	2.76	3.19	2.41
STRATA	Proportion near Ceiling	.03	.14	.49
LOWER	Mean	-0.01	1.55	4.14
MIDDLE	Standard Deviation	2.01	2.46	3.38
STRATA	Proportion near Ceiling	.00	.02	.16

Revisions:

This scale was not specifically reactive to time in consonant substitution or to time in consonant blends. It was dropped from the final battery.

2R09
Scale Reactivity

A to B

UPPER MIDDLE	4.63 (4) *	0.06 (8)	-1.00 (10)	2.00 (10)
LOWER MIDDLE	4.42 (6)	1.67 (6)	0.45 (12)	2.60 (10)

0-10

11-60

61-120

121-240

Minutes

in Consonant Substitution (Rhyming)

* Mean Change
 (n)

B to C

UPPER MIDDLE	3.00 (3)	2.33 (6)	2.00 (10)	2.84 (15)
LOWER MIDDLE	1.86 (7)	2.67 (3)	0.93 (7)	2.75 (15)

0-10

11-60

61-120

over 120

Minutes

in Consonant Substitution

Grade 2 Reading

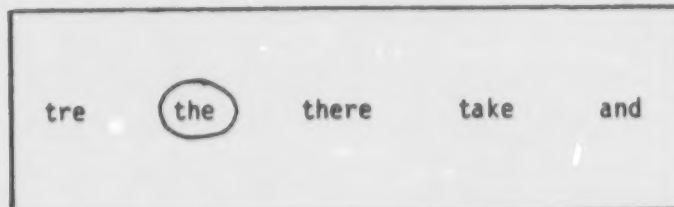
2R10

Scale Name:

Decoding - Sight Words

Description:

The student must identify a common sight word when it is spoken by the tester.

Example:Number of Items: 14Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	8.48	9.54	11.06
SAMPLE	Standard Deviation	4.23	3.98	3.65
	Mean Proportion Correct	.61	.68	.79
	Coefficient Alpha	.84	.83	.85
	Standard Error of Measurement	1.65	1.60	1.35
UPPER	Mean	9.51	11.05	12.15
MIDDLE	Standard Deviation	2.85	2.90	2.68
STRATA	Proportion near Ceiling	.28	.60	.81
LOWER	Mean	6.33	8.44	10.73
MIDDLE	Standard Deviation	3.61	3.54	3.19
STRATA	Proportion near Ceiling	.09	.30	.61

Revisions:

Scores on this subtest were generally high, while reactivity was poor. This scale was dropped from the A-B-C-D battery and used as part of the selection test.

2R10
Scale Reactivity

A to B

UPPER MIDDLE	1.85 (13) *	2.10 (5)	1.50 (8)	0.17 (6)
LOWER MIDDLE	3.56 (4)	-0.80 (5)	1.34 (14)	2.68 (11)

11-60

61-120

121-240

over 240

Minutes
 in Reading Words
 (no specific decoding focus)

* Mean Change
 (n)

B to C

UPPER MIDDLE	1.47 (15)	1.13 (12)		-0.50 (5)
LOWER MIDDLE	0.87 (4)	1.98 (10)	1.29 (7)	1.48 (11)

0-120

121-240

241-360

over 360

Minutes
 in Reading Words
 (no specific decoding focus)

Grade 2 Reading

2R12

Scale Name:

Context Clues - Initial Consonant

Description:

The student must understand and use sentence context to select a word to fill a blank. Choices vary in initial consonant, as in 2R01A & B

Example:

Mary is big and _____.
song
<u>strong</u>
wrong

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	2.13	4.02	5.76
SAMPLE	Standard Deviation	3.95	4.51	4.46
	Mean Proportion Correct	.21	.40	.58
	Coefficient Alpha	.85	.85	.88
	Standard Error of Measurement	1.44	1.67	1.48
UPPER	Mean	1.50	5.15	7.87
MIDDLE	Standard Deviation	3.08	3.72	2.85
STRATA	Proportion near Ceiling	.03	.27	.72
LOWER	Mean	-0.06	1.29	3.65
MIDDLE	Standard Deviation	1.16	2.56	4.16
STRATA	Proportion near Ceiling	.00	.00	.24

Revisions:

Little time was recorded in the matched time category. Time in blends showed a mixed pattern of reactivity. The scale was dropped.

2R12
Scale Reactivity

	A to B			
UPPER MIDDLE	1.00 (2)	3.29 (14)	6.40 (5)	1.86 (11)
LOWER MIDDLE	1.10 (5)	2.13 (16)	0.70 (5)	-0.88 (8)
	0-10	11-60	61-120	over 120
	Minutes in Consonant Blends			

* Mean Change
 (n)

	B to C			
UPPER MIDDLE	2.71 (12)		2.72 (18)	2.88 (4)
LOWER MIDDLE	2.13 (4)	4.67 (6)	2.15 (23)	1.50 (4)
	0-60	61-120	121-240	over 240
	Minutes in Consonant Blends			

Grade 2 Reading

2R13

Scale Name:

Context Clues - Grammatical Sense

Description:

The student must select the word which fits in the grammatical context of the sentence. Other choices are semantically related but do not fit the context.

Example:

A _____ lives in the water. swim <u>fish</u> under
--

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	4.52	5.86	7.44
SAMPLE	Standard Deviation	3.89	3.76	3.32
	Mean Proportion Correct	.45	.59	.74
	Coefficient Alpha	.79	.78	.82
	Standard Error of Measurement	1.71	1.66	1.35
UPPER	Mean	5.55	7.38	9.11
MIDDLE	Standard Deviation	2.17	2.59	1.35
STRATA	Proportion near Ceiling	.18	.59	.89
LOWER	Mean	1.95	4.69	6.85
MIDDLE	Standard Deviation	2.50	2.89	3.16
STRATA	Proportion near Ceiling	.05	.15	.51

Revisions:

This scale was the most direct measure in the battery of the student's skill at reading and using sentence context. In relationship to practice time in context clues, reactivity was poor. The scale was dropped.

2R13
Scale Reactivity

A to B

UPPER MIDDLE	*	2.44 (8)	2.15 (10)	0.73 (13)
LOWER MIDDLE	4.50 (5)	4.67 (6)	3.21 (7)	1.72 (16)
	0-10	11-60	61-120	over 120

Minutes
in Context Clues (total)

* Mean Change
(n)

B to C

UPPER MIDDLE	2.07 (14)	0.63 (4)	1.85 (16)
LOWER MIDDLE	3.08 (12)	0.88 (13)	2.88 (12)
	0-120	121-360	361-600

Minutes
in Context Clues

Grade 2 Reading 2R14

Scale Name: Context Clues - Form of WordDescription: The student must use understanding of sentence meaning and knowledge of word structure to select the correct word to fill a blank.Example:

Something that warms you up is a _____.

heating

heats

heater

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	1.79	2.28	4.30
SAMPLE	Standard Deviation	3.22	3.95	4.18
	Mean Proportion Correct	.18	.23	.43
	Coefficient Alpha	.68	.75	.80
	Standard Error of Measurement	1.73	1.88	1.79
UPPER	Mean	0.26	1.77	5.60
MIDDLE	Standard Deviation	2.28	2.90	3.02
STRATA	Proportion near Ceiling	.03	.00	.29
LOWER	Mean	0.40	-0.16	1.95
MIDDLE	Standard Deviation	1.59	2.35	3.04
STRATA	Proportion near Ceiling	.00	.00	.00

Revisions:

Little time was recorded in the matched time category from A to B. But compared to combined time in root words and affixes the scale was consistently reactive for students in the upper group. Eight items were retained and combined with 2R18 to form a Root Words and Affixes scale. Items 7 and 9 were dropped. Some items were revised to make the reading less difficult while still testing the same word ending.

2R14
Scale Reactivity

A to B

UPPER MIDDLE	-4.17 * (3)	-0.13 (4)	1.08 (13)	1.37 (12)
LOWER MIDDLE	-2.19 (8)	-1.95 (11)	1.00 (11)	-0.50 (4)

0-10 11-60 61-120 over 120

Minutes

in Root Words, Prefixes, and Suffixes

* Mean Change
 (n)

B to C

UPPER MIDDLE	5.25 (2)	2.77 (11)	4.40 (21)
LOWER MIDDLE	3.36 (14)	2.15 (10)	0.73 (13)

0-120 121-240 over 240

Minutes

in Root Words, Prefixes, and Suffixes

Item Reactivity (Upper Middle Strata)

Item #	Proportion Correct at A	A to B		B to C	
		Gain	Reactivity	Gain	Reactivity
1	.20	.31	+	.35	+
2	.22	.03	F	.18	+
3	.25	.09	F	.26	+
4	.27	.23	F	.21	+
5	.35	.11	-	.44	F
6	.47	.20	F	.18	+
7	.35	.26	+	.12	+
8	.17	.17	+	.32	-
9	.27	.11	F	.44	-
10	.30	.23	F	.29	+

Grade 2 Reading

2R16

Scale Name:

Word Structure - Root Words

Description:

The student must identify the root word in a word containing a prefix or a suffix. Some items involve spelling changes.

Example:

<u>unlock</u>	uncle	look	<u>lock</u>
<u>pinning</u>	<u>pin</u>	pine	inn

Number of Items: 14Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	3.83	5.60	8.66
SAMPLE	Standard Deviation	4.54	4.54	4.69
	Mean Proportion Correct	.27	.40	.62
	Coefficient Alpha	.81	.77	.83
	Standard Error of Measurement	1.91	2.08	1.85
UPPER	Mean	3.77	6.96	10.81
MIDDLE	Standard Deviation	2.96	2.79	2.63
STRATA	Proportion near Ceiling	.03	.05	.45
LOWER	Mean	.94	3.15	6.75
MIDDLE	Standard Deviation	2.08	3.35	3.89
STRATA	Proportion near Ceiling	.00	.00	.13

Revisions:

Scales 2R16 and 2R18 are different formats for testing the same skill. Both scales showed gain with instruction. Scale 2R16, the multiple-choice format, tended to show more gain at lower time blocks than 2R18 and hence was less specifically reactive to instruction. Scale 2R16 was dropped in favor of 2R18.

2R16
Scale Reactivity

A to B

UPPER MIDDLE	3.50 [*] (3)	4.63 (4)	1.00 (13)	3.37 (12)
LOWER MIDDLE	2.94 (8)	1.14 (11)	1.18 (4)	5.88 (4)

0-10

11-60

61-120

over 120

Minutes

in Root Words, Prefixes and Suffixes

* Mean Change
 (n)

B to C

UPPER MIDDLE			4.50 (12)	3.79 (21)
LOWER MIDDLE	3.92 (6)	1.56 (8)	3.75 (10)	5.57 (14)

0-60

61-120

121-240

over 240

Minutes

in Root Words, Prefixes and Suffixes

Grade 2 Reading

2R17

Scale Name:

Word Structure - Compound Words

Description:

The student must divide simple compound words into two parts.

Example:

gold/fish

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	4.17	6.46	8.07
SAMPLE	Standard Deviation	4.75	4.52	3.41
	Mean Proportion Correct	.42	.65	.81
	Coefficient Alpha	.82	.83	.81
	Standard Error of Measurement	1.93	1.79	1.41
UPPER	Mean	5.90	8.56	9.36
MIDDLE	Standard Deviation	3.42	2.17	2.02
STRATA	Proportion near Ceiling	.51	.89	.92
LOWER	Mean	1.35	5.18	8.19
MIDDLE	Standard Deviation	3.04	3.69	3.21
STRATA	Proportion near Ceiling	.00	.28	.78

Revisions:

This scale was one of the more strongly reactive, as shown, especially by the upper group A to B and by the lower group B to C. The negative trend for the upper group B to C is caused by ceiling effects. An 8-item scale was constructed for III-B, using items 1, 3, 4, and 5, and adding 4 new items with similar characteristics. These new items should be difficult enough to reduce ceiling effects. It will also be possible to combine this scale with the Root Words and Affixes scale and analyze achievement in word structure at this more general level.

2R17
Scale Reactivity

A to B			
UPPER MIDDLE	1.56 (9)	2.27 (11)	4.45 (11)
	3.06 (18)	3.40 (5)	4.36 (11)
Minutes in Compound Words			
	0-10	11-60	61-240

* Mean Change
(n)

B to C				
UPPER MIDDLE	2.40 (5)	0.50 (12)	-1.10 (10)	1.67 (6)
	1.75 (4)	2.17 (12)	4.90 (10)	6.20 (5)
Minutes in Compound Words				
	0-10	11-60	61-120	121-240

Item Reactivity (Lower Middle Strata)

Item #	Proportion Correct at A	A to B		B to C	
		Gain	Reactivity	Gain	Reactivity
1	.13	.35	+	.31	F
2	.66	.27	F	.03	+
3	.40	.40	+	.19	+
4	.47	.35	+	.03	+
5	.32	.20	+	.44	+
6	.68	.20	+	.09	+
7	.55	.25	F	.03	+
8	.62	.15	-	.13	+
9	.06	.30	-	.44	+
10	.43	.47	+	.13	-

Grade 2 Reading

2R18

Scale Name:

Word Structure - Root Word Division

Description:

The student must divide a word into two parts, where the parts are a root word and a prefix or suffix.

Example:

jump/ing re/run

Number of Items: 12Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean *	-1.24	0.50	4.35
	Standard Deviation	5.71	6.65	6.37
	Mean Proportion Correct	-.10	.04	.36
	Coefficient Alpha	.81	.85	.86
	Standard Error of Measurement	2.35	2.46	2.27
UPPER MIDDLE STRATA	Mean	-1.90	2.51	6.42
	Standard Deviation	3.80	4.42	4.74
	Proportion near Ceiling	.00	.03	.31
LOWER MIDDLE STRATA	Mean	-4.20	-2.50	2.61
	Standard Deviation	3.89	4.69	5.48
	Proportion near Ceiling	.00	.03	.08

Revisions:

This scale was combined with 2R14 to form a Root Words and Affixes scale. Items 2, 5, 8, and 9 were retained intact. Five other items were formed by revision and recombination of existing items, for a total of 9 word division items.

* Note: The absolute level of scores presented here is misleading because the correction for guessing was applied as for a 2-choice item, thus over correcting and lowering scores. Since the same correction was used at all testing occasions, reactivity data are interpretable as on other scales.

2R18

Scale Reactivity

A to B

UPPER
MIDDLELOWER
MIDDLE

2.00 [*] (3)	0.50 (4)	4.69 (13)	4.17 (12)
1.75 (8)	-2.00 (11)	2.36 (11)	6.75 (4)

0-10

11-60

61-120

over 120

Minutes

in Root Words, Prefixes, and Suffixes

* Mean Change
(n)

B to C

UPPER
MIDDLELOWER
MIDDLE

		4.27 (11)	3.04 (21)
-2.00 (5)	12.29 (7)	5.75 (8)	5.25 (12)

0-60

61-120

121-240

over 240

Minutes

in Root Words, Prefixes, and Suffixes

Item Reactivity

Item #	Proportion Correct at A	A to B		B to C	
		Gain	Reactivity	Gain	Reactivity
1	.63	.26	F	.00	-
2	.27	.50	+	.06	-
3	.78	.09	+	.06	+
4	.15	.15	-	.42	-
5	.71	.18	-	.06	-
6	.10	.32	F	.15	-
7	.61	.21	+	.06	-
8	.41	-.03	-	.12	+
9	.05	.18	F	.18	+
10	.44	.29	F	.15	-
11	.27	.50	F	.03	-
12	.00	.09	-	.27	-

Grade 2 Reading

2R19

Scale Name:

Word Structure - Number of Syllables

Description:

The student must identify the number of syllables in a word. Some words are unfamiliar and therefore require visual as well as auditory analysis.

Example:

bicycle	1	2	③
---------	---	---	---

Number of Items: 19Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	3.49	7.02	9.60
	Standard Deviation	5.04	5.62	6.39
	Mean Proportion Correct	.18	.37	.51
	Coefficient Alpha	.77	.77	.85
	Standard Error of Measurement	2.37	2.62	2.43
UPPER MIDDLE STRATA	Mean	3.43	7.20	11.83
	Standard Deviation	3.18	4.16	5.09
	Proportion near Ceiling	.00	.05	.29
LOWER MIDDLE STRATA	Mean	0.55	4.03	6.14
	Standard Deviation	2.85	3.97	4.46
	Proportion near Ceiling	.00	.00	.03

Revisions:

A ten-item syllables scale will be used in III-B. Items 1, 3, 7, 12, 13, 14, 15, and 18 were retained. Items 11 and 19 were replaced with similar items.

2R19
Scale Reactivity

A to B			
UPPER MIDDLE	2.72 [*] (16)	3.63 (12)	4.13 (4)
	3.83 (27)	3.29 (7)	
LOWER MIDDLE			
	0-10	11-60	61-120
Minutes in Syllables			

* Mean Change
(n)

B to C				
UPPER MIDDLE	3.63 (4)	2.60 (5)	5.89 (9)	4.62 (16)
	1.72 (18)	6.33 (3)	2.86 (11)	0.80 (5)
LOWER MIDDLE				
	0-10	11-60	61-120	over 120
Minutes in Syllables				

Item Reactivity (Upper Middle Strata)

Item #	Proportion Correct at A	A to B		B to C	
		Gain	Reactivity	Gain	Reactivity**
1	.50	.20	-	.12	+
2	.52	.43	-	-.15	+
3	.40	.17	+	.18	+
4	.50	.20	F	.03	F
5	.45	.09	-	.15	F
6	.47	.31	-	.03	-
7	.45	.29	F	.26	-
8	.20	.17	-	.24	F
9	.20	.11	F	.26	F
10	.30	.11	F	.26	F
11	.25	-.06	+	.35	F
12	.40	.14	+	.24	+
13	.25	.31	-	.18	+
14	.38	.14	-	.32	+
15	.22	.14	F	.26	+
16	.20	.14	F	.26	+
17	.25	.29	-	.24	+
18	.17	.26	-	.24	+
19	.05	.17	-	.32	-

** B to C item reactivity calculated with a combined word structure time.

Grade 2 Reading

2R20

Scale Name:

Word Structure - Contractions

Description:

The student must match a contraction with the correct expanded form.

Example:

		<u>he's</u>	
A.	she	☒ C.	he is
B.	it is	D.	he wa's
		<u>he is</u>	
☒ A.	he'd	C.	it's
☐ B.	he's	D.	I'm

Number of Items:

10

Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	4.49	5.59	7.12
SAMPLE	Standard Deviation	3.57	3.42	3.20
	Mean Proportion Correct	.45	.56	.71
	Coefficient Alpha	.79	.77	.81
	Standard Error of Measurement	1.57	1.56	1.34
UPPER	Mean	5.36	6.59	7.50
MIDDLE	Standard Deviation	3.14	2.95	2.30
STRATA	Proportion near Ceiling	.21	.40	.58
LOWER	Mean	3.28	5.14	6.95
MIDDLE	Standard Deviation	3.50	3.07	3.38
STRATA	Proportion near Ceiling	.13	.23	.47

Revisions:

This scale was dropped from the final battery, due to relatively low allocated time. Other areas of word structure were considered more important and more reactive.

2R20
Scale Reactivity

A to B

UPPER
MIDDLE

0.99*
(24)

1.00
(8)

LOWER
MIDDLE

1.55
(35)

1.99
(4)

0-10

11-60

Minutes
in Contractions

* Mean Change
(n)

B to C

UPPER
MIDDLE

0.55
(11)

-0.11
(6)

1.54
(13)

LOWER
MIDDLE

0.53
(10)

4.47
(10)

1.67
(11)

0-10

11-60

61-240

Minutes
in Contractions

Grade 2 Reading

2R22

Scale Name:

Vocabulary - Synonyms

Description:

The student must identify the word with the same meaning as an underlined word.

Example:

a <u>little</u> dog	
A. fast	☒ small
B. funny	D. long

Number of Items: 18Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	3.61	5.44	8.70
SAMPLE	Standard Deviation	5.15	6.13	6.75
	Mean Proportion Correct	.20	.30	.48
	Coefficient Alpha	.82	.86	.90
	Standard Error of Measurement	2.14	2.21	2.09
UPPER	Mean	2.75	6.57	10.76
MIDDLE	Standard Deviation	3.51	5.05	4.77
STRATA	Proportion near Ceiling	.00	.08	.22
LOWER	Mean	0.58	1.46	5.94
MIDDLE	Standard Deviation	2.21	3.25	5.84
STRATA	Proportion near Ceiling	.00	.00	.06

Revisions:

This scale showed good gains over the year with minimal ceiling problems for the middle strata. Little time was specifically coded to synonyms during the A to B period. Time was coded to synonyms in the B to C period, where the scale appears reactive to both general increases in reading ability and specific work on synonyms. Items 9 and 15 were dropped to create a 16-item scale for IIIB. A synonyms time category will be included in the teacher logs for IIIB to match to learning outcomes.

2R22

Scale Reactivity

A to B

UPPER MIDDLE	5.42 (4) *	4.83 (8)	0.61 (6)	3.49 (19)
LOWER MIDDLE	1.96 (9)	-1.19 (7)	0.31 (13)	2.03 (13)
	0-10	11-60	61-120	over 120

Minutes
in Word Meaning* Mean Change
(n)

B to C

UPPER MIDDLE	3.33 (7)	2.39 (11)	4.58 (11)	5.72 (6)
LOWER MIDDLE	2.78 (9)	4.28 (18)	4.72 (6)	
	0-10	11-60	61-120	120-240

Minutes
in SynonymsItem Reactivity (Upper Middle Strata)

Item #	Proportion Correct at A	A to B		B to C	
		Gain	Reactivity	Gain	Reactivity
1	.41	.32	+	.11	**
2	.39	.41	+	.00	
3	.41	.22	+	.03	
4	.37	.24	F	.23	
5	.59	.11	-	.20	
6	.37	.32	+	.14	
7	.15	.24	-	.34	
8	.39	.19	+	.17	
9	.44	.16	-	.06	
10	.24	.05	-	.11	
11	.24	.32	-	.09	
12	.20	.14	-	.20	
13	.27	.14	-	.29	
14	.24	-.08	F	.31	
15	.17	.14	-	.14	
16	.10	.19	-	.17	
17	.10	.11	-	.09	
18	.24	.16	+	.17	

** Note: Item reactivity for B-C missing.

Grade 2 Reading

2R23

Scale Name:

Word Meaning - Multimeaning Words

Description:

The student must select the appropriate definition for a word as it is used in the context of a sentence.

Example:

I saw the kittens in the box.

- A. cut
- ☒ B. looked at
- C. a tool for cutting

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	2.24	3.47	4.46
SAMPLE	Standard Deviation	3.18	3.86	4.00
	Mean Proportion Correct	.22	.35	.45
	Coefficient Alpha	.58	.73	.76
	Standard Error of Measurement	1.96	1.91	1.85
UPPER	Mean	2.00	3.92	5.51
MIDDLE	Standard Deviation	2.36	3.74	3.42
STRATA	Proportion near Ceiling	.00	.17	.33
LOWER	Mean	0.21	1.49	3.53
MIDDLE	Standard Deviation	2.04	2.80	3.47
STRATA	Proportion near Ceiling	.00	.03	.20

Revisions:

This scale was dropped due to its high level of difficulty, relatively low gains, and poor reactivity.

2R23
Scale Reactivity

A to B

UPPER
MIDDLE1.75
(4) *3.56
(9)0.08
(6)2.42
(15)LOWER
MIDDLE1.83
(9)2.00
(8)1.00
(11)1.08
(12)

0-10

11-60

61-120

over 120

Minutes
 in Word Meaning

* Mean Change
 (n)

B to C

UPPER
MIDDLE-0.31
(18)3.38
(8)3.93
(7)LOWER
MIDDLE2.71
(19)0.21
(7)3.92
(6)

0-10

11-60

61-240

Minutes
 in Multimeaning Words

Grade 2 Reading

2R24

Scale Name:

Word Meaning - Unfamiliar Words

Description:

The student must use sentence context to understand the meaning of an unfamiliar word.

Example:

After a long day John was weary and wanted to sleep.

- A. friendly
B. busy
C. tired

Number of Items: 5Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	1.11	1.56	2.50
SAMPLE	Standard Deviation	2.11	2.28	2.50
	Mean Proportion Correct	.22	.31	.50
	Coefficient Alpha	.64	.63	.77
	Standard Error of Measurement	1.14	1.24	1.08
UPPER	Mean	1.14	1.94	3.04
MIDDLE	Standard Deviation	1.83	2.00	2.14
STRATA	Proportion near Ceiling	.08	.11	.42
LOWER	Mean	0.12	0.54	1.78
MIDDLE	Standard Deviation	1.51	1.69	2.49
STRATA	Proportion near Ceiling	.00	.03	.28

Revisions:

This scale was dropped due to poor specific reactivity and constraints on testing time.

2R24
Scale Reactivity

A to B

UPPER MIDDLE	1.00 (4) *	0.06 (9)	0.33 (6)	1.50 (15)
LOWER MIDDLE	1.11 (9)	0.81 (8)	1.18 (11)	-1.25 (12)

0-10

11-60

61-120

over 120

Minutes
 in Word Meaning

* Mean Change
 (n)

B to C

UPPER MIDDLE	1.08 (6)	0.79 (17)	1.20 (12)
LOWER MIDDLE	-0.17 (3)	1.38 (16)	1.65 (13)

0-10

11-60

61-240

Minutes
 in Unfamiliar Words

Grade 2 Reading

2R25

Scale Name:

Word Meaning - Pronoun Reference

Description:

The student must identify the referent of a pronoun as used in context.

Example:

Lisa tried to open the window.
It was stuck.

- A. Lisa
 B. the window
 C. open

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	1.75	2.46	3.70
SAMPLE	Standard Deviation	2.76	3.33	4.00
	Mean Proportion Correct	.18	.25	.37
	Coefficient Alpha	.51	.64	.79
	Standard Error of Measurement	1.84	1.91	1.75
UPPER	Mean	1.55	2.26	3.94
MIDDLE	Standard Deviation	2.08	2.78	3.27
STRATA	Proportion near Ceiling	.00	.06	.14
LOWER	Mean	.73	1.21	2.38
MIDDLE	Standard Deviation	1.74	2.47	3.54
STRATA	Proportion near Ceiling	.00	.03	.14

Revisions:

This scale was difficult for the children but appeared to be a good short test of the ability to think analytically about what one has read. Scores on this test correlated with ability to identify the main idea of a passage, and these two scales formed a distinct cluster in the factor analysis. In addition, the scale appeared reactive to specific instruction during the B to C period. This scale has been carried over to the IIIB battery. Item 7 was revised substantially; other items received minor modification.

2R25
Scale Reactivity

		A to B			
UPPER MIDDLE	-0.67 (4)	1.54 (9)	-0.50 (6)	1.07 (15)	
LOWER MIDDLE	-0.05 (9)	1.52 (8)	-0.92 (11)	1.51 (12)	
	0-10	11-60	61-120	over 120	
		Minutes in Word Meaning			

* Mean Change
(n)

		B to C		
UPPER MIDDLE	1.77 (26)	2.08 (4)	4.33 (3)	
LOWER MIDDLE	1.18 (23)	1.84 (4)	2.27 (5)	
0-10		11-60		61-240
Minutes in Pronoun Reference				

Item Reactivity (Upper Middle Strata)

Item #	Proportion Correct at B	B Gain	to C Reactivity
1	.94	.06	-
2	.61	.03	F
3	.36	.18	-
4	.18	.33	+
5	.39	.27	-
6	.55	.21	+
7	.30	-.03	-
8	.30	.12	+
9	.21	.18	+
10	.48	-.03	+

Grade 2 Reading

2R27

Scale Name:

Comprehension - Literal Recall

Description:

The student must demonstrate his understanding of a prose passage by recalling information literally stated in the passage.

Example:

John went to the store to buy bread....

Where did John go?

- ☒ A. to the store
- ☐ B. to school
- ☐ C. to the park
- ☐ D. to the movies

Number of Items: 9Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	1.87	3.02	4.65
	Standard Deviation	3.02	3.02	3.50
	Mean Proportion Correct	.21	.34	.52
	Coefficient Alpha	.72	.61	.76
	Standard Error of Measurement	1.51	1.78	1.61
UPPER MIDDLE STRATA	Mean	1.58	2.90	5.17
	Standard Deviation	2.09	2.68	2.67
	Proportion near Ceiling	.00	.09	.36
LOWER MIDDLE STRATA	Mean	0.32	1.74	3.00
	Standard Deviation	1.65	1.70	3.42
	Proportion near Ceiling	.00	.03	.17

Revisions:

In general, the process dimension in the comprehension matrix, 2R27-30, showed less of a match between time and learning than the content dimension of the matrix, 2R31-34. Item reactivity was studied along the content dimension. Scales in the IIIB test battery will be labeled along the content dimension. Within these scales some items were chosen from the set of literal recall items. Seven of the nine items were retained.

2R27
Scale Reactivity

	A to B		
UPPER MIDDLE	0.59 [*] (9)	2.07 (12)	0.21 (11)
LOWER MIDDLE	0.94 (12)	2.04 (16)	2.17 (6)
	0-10	11-60	61-120
	Minutes in Literal Recall		

* Mean Change
 (n)

	B to C		
UPPER MIDDLE	1.77 (11)	2.02 (17)	1.78 (3)
LOWER MIDDLE	2.24 (10)	1.44 (18)	1.67 (4)
	11-120	121-240	over 360
	Minutes in Recall and Translation		

Grade 2 Reading

2R28

Scale Name:

Comprehension - Translation

Description:

The student must recognize ideas stated in different words (paraphrase), and recall information when ideas are restated.

Example:

John stopped at the corner grocery to buy bread....

Where did John go?

- ☒ A. to the store
- ☐ B. to school
- ☐ C. to the park
- ☐ D. to the movies

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	1.68	2.96	4.38
SAMPLE	Standard Deviation	2.61	3.11	3.22
	Mean Proportion Correct	.17	.30	.44
	Coefficient Alpha	.61	.64	.68
	Standard Error of Measurement	1.54	1.78	1.73
UPPER	Mean	1.07	2.74	4.82
MIDDLE	Standard Deviation	1.83	2.76	2.99
STRATA	Proportion near Ceiling	.00	.06	.17
LOWER	Mean	0.52	1.83	2.80
MIDDLE	Standard Deviation	1.79	2.00	2.62
STRATA	Proportion near Ceiling	.00	.00	.03

Revisions:

Within the IIIB Comprehension scales, six of the ten translation items were retained. (See notes under 2R27.)

2R28
Scale Reactivity

A to B

UPPER
MIDDLE

1.83*
(26)

1.89
(6)

LOWER
MIDDLE

1.56
(26)

0.11
(8)

0-10

11-60

Minutes
in Translation

* Mean Change
(n)

B to C

UPPER
MIDDLE

1.94
(11)

2.43
(17)

-0.50
(3)

LOWER
MIDDLE

0.85
(10)

1.22
(18)

1.79
(4)

11-120

121-240

over 360

Minutes
in Recall and Translation

Grade 2 Reading

2R29

Scale Name:

Comprehension - Synthesis

Description:

The student must synthesize information from different sentences in the text. Includes inference, when based closely on information given in the text.

Example:

John hopped on his bike. At the store,
he bought some bread....

Where did John go?

- ☒ A. to the store
- ☐ B. to school
- ☐ C. to the park
- ☐ D. to the movies

Number of Items: 10

Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	1.15	2.19	4.01
SAMPLE	Standard Deviation	3.11	3.40	3.79
	Mean Proportion Correct	.12	.22	.40
	Coefficient Alpha	.68	.64	.74
	Standard Error of Measurement	1.66	1.95	1.85
UPPER	Mean	-0.31	2.03	5.07
MIDDLE	Standard Deviation	2.23	3.03	3.03
STRATA	Proportion near Ceiling	.00	.06	.20
LOWER	Mean	0.66	0.44	2.33
MIDDLE	Standard Deviation	1.64	2.44	3.16
STRATA	Proportion near Ceiling	.00	.00	.06

Revisions:

Within the IIIB comprehension scales, six of the ten synthesis items were retained. (See notes under 2R27.)

2R29
Scale Reactivity

A to B

UPPER
MIDDLE2.09*
(27)3.17
(5)LOWER
MIDDLE0.23
(31)-3.00
(3)

0-10

11-60

Minutes
in Synthesis* Mean Change
(n)

B to C

UPPER
MIDDLE4.10
(5)3.11
(14)1.77
(5)1.76
(7)LOWER
MIDDLE2.14
(14)3.37
(9)2.11
(3)1.00
(6)

0-10

11-60

61-120

121-360

Minutes
in Synthesis and Extrapolation

Grade 2 Reading

2R30

Scale Name:

Comprehension - Extrapolation

Description:

The student must go beyond the information in the text and rely on his own knowledge or experience to supply additional information. Includes predicting additional events or applying a generalization.

Example:

Mother gave John some money. John bought some bread for dinner....

Where did John go?

- ☒ A. to the store
- ☐ B. to school
- ☐ C. to the park
- ☐ D. to the movies

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	1.11	2.00	3.24
SAMPLE	Standard Deviation	2.54	3.38	3.59
	Mean Proportion Correct	.11	.20	.32
	Coefficient Alpha	.52	.67	.69
	Standard Error of Measurement	1.67	1.85	1.88
UPPER	Mean	0.52	2.09	3.49
MIDDLE	Standard Deviation	1.92	2.75	3.20
STRATA	Proportion near Ceiling	.00	.03	.08
LOWER	Mean	0.22	0.23	1.60
MIDDLE	Standard Deviation	1.29	1.71	3.59
STRATA	Proportion near Ceiling	.00	.00	.08

Revisions:

As these items were the most difficult in a generally difficult set of comprehension items, most were dropped. Four items were retained. These four items were as reactive to the content dimension as any of the other retained items.

		A to B	
UPPER MIDDLE	2.02* (24)		0.53 (7)
LOWER MIDDLE	0.16 (31)		-1.84 (2)
	0-10		11-60
Minutes in Extrapolation			

* Mean Change
(n)

B to C				
UPPER MIDDLE	-0.83 (5)	1.95 (14)	2.23 (5)	1.09 (7)
LOWER MIDDLE	0.95 (14)	2.02 (9)	3.78 (3)	0.67 (6)
	0-10	11-60	(3)	121-360
Minutes in Synthesis and Extrapolation				

Grade 2 Reading 2R31

Scale Name: Comprehension - EventsDescription: The student must understand elements of the action related in a passage. Includes questions about who, what, or how.Example:

John went to the store and bought some bread....

What did John buy?

- ☒ A. bread
- ☐ B. candy
- ☐ C. a toy truck
- ☐ D. some milk

Number of Items: 9Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean Total	1.56	2.42	4.03
SAMPLE	Standard Deviation	2.56	3.04	3.37
	Mean Proportion Correct	.19	.27	.45
	Coefficient Alpha	.61	.64	.73
	Standard Error of Measurement	1.51	1.72	1.65
UPPER	Mean	0.88	2.69	4.73
MIDDLE	Standard Deviation	1.91	2.41	2.92
STRATA	Proportion near Ceiling	.00	.00	.22
LOWER	Mean	0.63	0.80	2.30
MIDDLE	Standard Deviation	1.32	2.25	2.97
STRATA	Proportion near Ceiling	.00	.00	.06

Revisions:

Scales 2R31, Events, and 2R32, Description, were combined for the IIIB test battery. Items 1, 2, 4, and 8 were retained; item 9 was retained with revisions.

2R31
Scale Reactivity

A to B			
UPPER MIDDLE	-0.72 [*] (7)	1.61 (11)	2.89 (14)
	-1.83 (7)	0.81 (16)	0.98 (11)
Minutes in Events			
	0-10	11-60	61-120

* Mean Change
(n)

B to C		
UPPER MIDDLE	2.12 (17)	1.54 (14)
	1.32 (25)	2.19 (7)
Minutes in Events		
	11-240	over 240

Item Reactivity (Upper Middle Strata)

Item #	Proportion Correct at A	A to B		B to C	
		Gain	Reactivity	Gain	Reactivity
1	.12	.35	+	.24	+
2	.66	.25	+	.00	-
3	.27	.11	+	.11	-
4	.37	.22	+	.14	+
5	.17	.17	+	.20	+
6	.12	.10	F	.34	-
7	.34	.16	+	.09	F
8	.46	.24	+	.06	F
9	.20	.08	F	.26	-

Grade 2 Reading 2R32

Scale Name: Comprehension - DescriptionDescription: The student must understand descriptions of characters and emotions or descriptions of settings (including time and place).Example:

Mary felt scared walking through the dark woods....	
How did Mary feel?	The woods were _____.
A. happy	A. sunny
B. mad	☒ B. dark
☒ C. afraid	C. rainy

Number of Items: 13Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean Total	2.09	3.91	5.77
SAMPLE	Standard Deviation	3.60	4.23	4.86
	Mean Proportion Correct	.16	.30	.44
	Coefficient Alpha	.70	.73	.82
	Standard Error of Measurement	1.91	2.12	1.99
UPPER	Mean	1.01	3.53	6.53
MIDDLE	Standard Deviation	2.33	3.93	4.11
STRATA	Proportion near Ceiling	.00	.03	.17
LOWER	Mean	0.69	2.07	3.85
MIDDLE	Standard Deviation	1.06	2.46	4.35
STRATA	Proportion near Ceiling	.00	.00	.17

Revisions:

Items 1, 2, 3, 4, 10, and 12 were retained in the combined events-description scale.

2R32
Scale Reactivity

A to B			
UPPER MIDDLE	1.18 [*] (17)	4.94 (8)	3.07 (7)
	1.72 (21)	1.23 (13)	
LOWER MIDDLE			
	0-10	11-60	61-240
Minutes in Description			

* Mean Change
(n)

B to C			
UPPER MIDDLE	1.79 (11)	4.14 (12)	1.60 (8)
	1.38 (13)	5.05 (9)	0.89 (10)
LOWER MIDDLE			
	0-10	11-60	61-240
Minutes in Description			

Item Reactivity (Upper Middle Strata)

Item #	Proportion Correct at A	A to B		B to C	
		Gain	Reactivity	Gain	Reactivity
1	.10	.12	+	.15	+
2	.05	.21	F	.36	F
3	.32	.21	F	.15	+
4	.49	.44	+	.03	+
5	.37	.25	+	.03	-
6	.17	.25	+	.14	F
7	.20	.16	+	.20	F
8	.32	.22	+	.23	+
9	.49	.22	-	.09	-
10	.29	.24	+	.17	-
11	.34	.08	F	.03	+
12	.41	-.05	+	.17	+
13	.29	.00	+	.26	F

Grade 2 Reading 2R33

Scale Name: Comprehension - RelationshipsDescription: The student must understand the relationships between events. Includes logical relationships (cause and effect) and temporal relationships (event sequence).Example:

Sally wanted to play ball, so she called her friend.....

Why did Sally call her friend?

- ☒ A. to ask her to play
☐ B. to say hello
☐ C. to tell her about the homework

Number of Items: 9Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean Total	0.96	1.76	3.19
SAMPLE	Standard Deviation	2.67	3.21	3.33
	Mean Proportion Correct	.11	.20	.35
	Coefficient Alpha	.65	.67	.69
	Standard Error of Measurement	1.50	1.74	1.76
UPPER	Mean	0.39	1.43	3.51
MIDDLE	Standard Deviation	1.93	2.85	2.73
STRATA	Proportion near Ceiling	.00	.09	.14
LOWER	Mean	-0.07	0.28	1.43
MIDDLE	Standard Deviation	1.93	2.20	2.90
STRATA	Proportion near Ceiling	.00	.03	.00

Revisions:

Six relationship items are included in the IIIB test battery. Items 1, 3, 4, 7, and 9 were retained. One new item was added.

	A to B		
UPPER MIDDLE	0.87 [*] (19)	0.93 (7)	2.17 (6)
LOWER MIDDLE	0.80 (19)	-0.52 (10)	0.56 (5)
	0-10	11-60	61-120
	Minutes in Relationships		

* Mean Change
(n)

	B to C		
UPPER MIDDLE	2.56 (6)	2.01 (13)	1.48 (12)
LOWER MIDDLE	3.75 (4)	0.55 (10)	1.51 (18)
	0-10	11-60	over 60
	Minutes in Relationships		

Item Reactivity (Upper Middle Strata)

Item #	Proportion Correct at A	A Gain	to B Reactivity	B Gain	to C Reactivity
1	.32	.09	+	.15	-
2	.32	.18	F	.18	F
3	.37	.03	+	.00	+
4	.17	.31	+	.23	+
5	.15	.22	F	.43	-
6	.15	.17	F	.23	+
7	.29	.30	F	.11	+
8	.29	.19	F	.00	-
9	.17	.03	+	.14	F

Grade 2 Reading 2R34

Scale Name: Comprehension - Main IdeaDescription: The student must understand the central elements of a passage. Includes recognizing the topic or main characters and understanding a conclusion or generalization.Example:

This is a story about a cat named Felix...

What is this story mostly about?

- ☒ A. a cat
 B. a boy named Felix
 C. a turtle

Number of Items: 8Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean Total	1.20	2.08	3.30
SAMPLE	Standard Deviation	2.45	2.54	2.40
	Mean Proportion Correct	.15	.26	.41
	Coefficient Alpha	.60	.47	.44
	Standard Error of Measurement	1.44	1.73	1.68
UPPER	Mean	0.57	2.11	3.77
MIDDLE	Standard Deviation	1.79	1.84	2.13
STRATA	Proportion near Ceiling	.00	.03	.11
LOWER	Mean	0.47	1.09	2.14
MIDDLE	Standard Deviation	1.40	1.97	2.07
STRATA	Proportion near Ceiling	.00	.00	.00

Revisions:

One main idea item was retained for each of the six stories used to measure comprehension. These items are 1, 2, 3, 5, 7, and 8.

2R34
Scale Reactivity

A to B			
UPPER MIDDLE	0.27 [*] (14)	2.15 (14)	1.50 (4)
	0.68 (13)	0.48 (9)	0.77 (12)
LOWER MIDDLE			
	0-10	11-60	61-240
	Minutes in Main Idea		

* Mean Change
(n)

B to C			
UPPER MIDDLE	1.73 (13)	0.75 (10)	2.32 (8)
	0.64 (5)	1.08 (12)	1.83 (15)
LOWER MIDDLE			
	0-60	61-240	over 240
	Minutes in Main Idea		

Item Reactivity (Upper Middle Strata)

Item #	Proportion Correct at A	A to B		B to C	
		Gain	Reactivity	Gain	Reactivity
1	.34	.29	+	.21	+
2	.29	.24	+	-.03	+
3	.46	.17	+	.23	+
4	.32	.28	+	.09	F
5	.15	.19	+	.20	-
6	.07	.14	+	.26	-
7	.54	.14	+	.14	-
8	.22	.24	-	.11	F

Grade 2 Reading 2R35

Scale Name: Comprehension with Picture ResponseDescription: The student must demonstrate understanding of a sentence or story by selecting the picture which answers a question.Example:

I held the furry animal in my hand and fed it.

What did I have?



A.



B.



C.

Number of Items: 11Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	3.37	4.91	6.67
SAMPLE	Standard Deviation	3.83	4.42	4.15
	Mean Proportion Correct	.31	.45	.61
	Coefficient Alpha	.77	.83	.84
	Standard Error of Measurement	1.74	1.74	1.60
UPPER	Mean	3.28	6.46	8.43
MIDDLE	Standard Deviation	3.06	3.05	2.49
STRATA	Proportion near Ceiling	.05	.22	.56
LOWER	Mean	1.27	3.07	4.76
MIDDLE	Standard Deviation	2.66	4.03	3.91
STRATA	Proportion near Ceiling	.00	.09	.18

Revisions:

This scale was dropped from the A-B-C-D battery but used in the Selection Test.

	A to B		
UPPER MIDDLE	4.76 [*] (7)	2.60 (10)	0.80 (15)
LOWER MIDDLE	3.75 (6)	2.19 (13)	1.61 (15)
	11-120	121-240	over 240
	Minutes in Comprehension (Total)		

* Mean Change
 (n)

	B to C			
UPPER MIDDLE	1.22 (9)	1.78 (10)	2.83 (3)	2.06 (13)
LOWER MIDDLE	2.80 (9)	0.77 (8)	-0.13 (8)	1.73 (13)
	0-540	541-720	721-900	over 900
	Minutes in Comprehension (Total)			

GRADE 2 MATHEMATICS

Sample Sizes:

	Test Occasion		
	A	B	C
TOTAL SAMPLE	187*	170	155
UPPER STRATA	45	45	43
MIDDLE STRATA	46	46	36
LOWER STRATA	38	38	30

* All figures represent the total number of students tested. On any one subtest, missing data could reduce the number of students contributing.

Grade 2 Mathematics 2M01

Scale Name: Addition Without RegroupingDescription: Tests the student's knowledge of basic facts and the addition algorithm without regrouping. Items graduate in difficulty from sums less than 10 to sums of two 3-digit numbers.Example:

47	(A)	79	C. 89
+32			
	B. 15	D. 99	

Number of Items: 16Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	6.66	9.12	11.23
SAMPLE	Standard Deviation	5.00	5.53	5.33
	Mean Proportion Correct	.42	.57	.70
	Coefficient Alpha	.84	.88	.90
	Standard Error of Measurement	1.95	1.84	1.65
UPPER	Mean	10.01	13.33	14.93
STRATA	Standard Deviation	3.82	3.16	1.61
	Proportion near Ceiling	.26	.75	.91
MIDDLE	Mean	6.47	9.97	12.15
STRATA	Standard Deviation	3.93	3.98	4.39
	Proportion near Ceiling	.09	.35	.61
LOWER	Mean	3.07	5.48	7.93
STRATA	Standard Deviation	2.79	3.65	4.76
	Proportion near Ceiling	.00	.03	.21

Revisions:

Three lower level items were replaced and four new items were added to create a 20 item scale for "A" administration. Core scale of 16 items will be administered at the "B", "C", and "D" test points. Core scale now includes column addition with three single digit addends. The four items not included in the core scale are ones which students tend to be successful on at "A" or ones whose characteristics are quite similar to other items included in the core.

A to B

UPPER	3.20* (5)	2.07 (9)	3.65 (18)	4.63 (9)
MIDDLE	1.30 (9)	2.81 (14)	5.03 (10)	5.44 (9)
LOWER	3.03 (12)	3.50 (10)	.62 (7)	2.25 (4)

0-199 200-274 275-349 over 350
Minutes

* Mean Change
(n)

in Addition, No Regrouping

B to C

UPPER	2.11 (18)	.62 (13)		2.90 (10)
MIDDLE	2.45 (6)	3.33 (7)	-1.50 (4)	3.05 (19)
LOWER	2.87 (5)	5.00 (5)	.83 (6)	2.76 (11)

0-199 200-299 300-399 over 500
Minutes

in Addition, No Regrouping

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B Gain	to Reactivity	C Gain	to Reactivity
1	1.00	.00	F	-.03	-	-	-
2	.95	.02	+	.00	F	F	F
3	.74	.12	+	.03	F	F	F
4	.37	.37	+	.14	-	-	-
5	.63	.21	+	-.03	F	F	F
6	.49	.26	+	.17	F	F	F
7	.51	.23	-	.06	-	-	-
8	.47	.19	+	.14	-	-	-
9	.51	.26	F	.11	-	-	-
10	.42	.19	+	.17	F	F	F
11	.30	.21	+	.17	+	+	+
12	.44	.16	+	.25	+	+	+
13	.21	.14	+	.42	+	+	+
14	.28	.19	+	.28	+	+	+
15	.33	.21	+	.17	+	+	+
16	.40	.14	+	.14	+	+	+

Grade 2 Mathematics 2M02

Scale Name: Addition With RegroupingDescription: Tests the student's knowledge of the addition regrouping algorithm. Items include the addition of a 1-digit with a 2-digit number, two 2-digit numbers, and column addition with three 1 and 2-digit numbers.Example:

46	A. 51	C. 59
+ 15	(B.) 61	D. 62

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	1.51	2.87	4.21
	Standard Deviation	2.62	3.64	4.23
	Mean Proportion Correct	.15	.29	.42
	Coefficient Alpha	.61	.81	.86
	Standard Error of Measurement	1.54	1.49	1.52
UPPER STRATA	Mean	2.67	4.99	6.43
	Standard Deviation	2.75	3.78	3.94
	Proportion near Ceiling	.05	.32	.51
MIDDLE STRATA	Mean	1.17	1.94	4.18
	Standard Deviation	1.89	2.85	3.77
	Proportion near Ceiling	.00	.02	.22
LOWER STRATA	Mean	0.63	1.09	2.20
	Standard Deviation	1.71	2.21	3.06
	Proportion near Ceiling	.00	.00	.03

Revisions:

The four items involving the addition of a single digit and a 2-digit addend were dropped as they were as likely to be solved by the "adding on" method as by an application of regrouping. (See reactivity data on items 1-4 on the next page.) Four new items were added to create a ten item scale limited to the addition of two 2-digits addends and column addition with 1 and 2-digit addends.

A to B

UPPER	1.02 (16)	3.26 (22)	
MIDDLE	.18 (24)	.05 (7)	2.59 (9)
LOWER	.62 (22)	-1.00 (5)	1.33 (6)

0-9

10-59
Minutes

over 120

* Mean Change
(n)

in Addition with Regrouping

B to C

UPPER	1.30 (10)	1.87 (5)	3.33 (10)	.51 (15)
MIDDLE	1.67 (17)	.91 (8)	3.27 (5)	5.78 (3)
LOWER	.79 (17)	.33 (4)		3.67 (5)

0-199

300-399

400-499

over 500

Minutes

in Addition with Regrouping

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B Gain	to Reactivity	C
1	.28	.30	+	.06	-	
2	.40	.16	+	.17	F	
3	.42	.30	-	.08	F	
4	.40	.07	+	.22	F	
5	.12	.07	+	.22	F	
6	.14	.00	+	.19	+	
7	.21	-.02	+	.19	+	
8	.28	-.07	+	.33	+	
9	.16	.05	-	.19	+	
10	.14	-.02	F	.36	+	

Grade 2 Mathematics 2M03

Scale Name: Subtraction Without RegroupingDescription: Tests the student's knowledge of basic facts and the subtraction algorithm without regrouping. Items range from the subtraction of two 1-digit numbers to two 3-digit numbers.Example:

$15 - 8 = \square$	(A) 7	C. 13
	B. 9	D. 8

Number of Items: 16Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	3.48	6.28	8.38
	Standard Deviation	4.60	6.09	5.74
	Mean Proportion Correct	.22	.39	.52
	Coefficient Alpha	.80	.89	.87
	Standard Error of Measurement	2.01	1.93	1.98
UPPER STRATA	Mean	6.32	10.73	12.13
	Standard Deviation	3.54	4.87	3.21
	Proportion near Ceiling	.05	.55	.51
MIDDLE STRATA	Mean	1.92	5.76	9.95
	Standard Deviation	2.81	4.82	4.29
	Proportion near Ceiling	.00	.14	.29
LOWER STRATA	Mean	0.58	2.03	4.50
	Standard Deviation	2.11	4.01	4.35
	Proportion near Ceiling	.00	.03	.04

Revisions:

One item was revised and four were added for a 20 item scale to be given at the "A" test administration. Core scale of 16 items will be retained at the "B", "C", and "D" test points.

A to B

UPPER	2.13* (8)	2.80 (5)	4.60 (20)	6.58 (8)
MIDDLE	.97 (12)	4.07 (5)	4.59 (18)	7.76 (7)
LOWER	-.64 (12)	3.25 (4)	2.82 (9)	.71 (8)
	0-99	100-174	175-249	over 250
	Minutes			

* Mean Change
(n)

in Subtraction, No Regrouping

B to C

UPPER	1.02 (17)	.57 (14)		3.27 (10)
MIDDLE	4.00 (4)	4.81 (12)	1.33 (5)	6.41 (13)
LOWER	5.58 (4)	3.75 (4)	2.42 (4)	1.69 (15)
	0-119	120-239	240-359	over 360
	Minutes			

in Subtraction, No Regrouping

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B Gain	to Reactivity	C Gain	to Reactivity
1	.47	.12	+	.14	+		
2	.42	.16	+	.36	-		
3	.33	.19	+	.19	-		
4	.14	.19	+	.31	-		
5	.37	.28	+	.08	-		
6	.07	.26	+	.31	-		
7	.39	.20	F	.24	+		
8	.27	.23	-	.21	F		
9	.27	.20	+	.24	F		
10	.14	.30	+	.35	+		
11	.18	.30	+	.26	F		
12	.44	.25	+	.21	F		
13	.23	.18	+	.35	-		
14	.20	.20	+	.26	-		
15	.14	.16	F	.35	+		
16	.11	.09	+	.21	+		

Grade 2 Mathematics 2M04

Scale Name: Subtraction With Regrouping

Description: Tests the student's knowledge of the subtraction algorithm with regrouping. Items include the subtraction of a 1-digit from a 2-digit number and two 2-digit numbers.

Example:

30	A. 28	C. 22
<u>-12</u>	(B) 18	D. 12

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	-0.03	0.29	1.83
SAMPLE	Standard Deviation	1.89	2.61	3.99
	Mean Proportion Correct	.00	.03	.18
	Coefficient Alpha	.39	.67	.85
	Standard Error of Measurement	1.41	1.42	1.48
UPPER	Mean	-0.26	-0.22	2.89
STRATA	Standard Deviation	2.04	2.71	4.44
	Proportion near Ceiling	.00	.00	.21
MIDDLE	Mean	0.10	-0.37	0.70
STRATA	Standard Deviation	1.49	2.31	3.47
	Proportion near Ceiling	.00	.00	.03
LOWER	Mean	0.03	0.58	0.56
STRATA	Standard Deviation	1.41	1.48	2.44
	Proportion near Ceiling	.00	.00	.00

Revisions:

Items #7-10 involving the subtraction of two 2-digit numbers were dropped. Four items were added to create a 10 item scale which is primarily focused on the subtraction of a single digit from a 2-digit number since these items were more reactive to instruction in regrouping. (See item reactivity data. Items #1-5 are single digits from 2-digit problems.) Scale will only be administered at the "C" and "D" test points.

2M04
Scale Reactivity

A to B

UPPER	.18* (35)	-.75 (4)	
MIDDLE	-.64 (30)	.34 (3)	.07 (9)
LOWER	.70 (24)		-.76 (7)
	0-9	10-59	over 120

Minutes

* Mean Change
(n)

in Subtraction with Regrouping

B to C

UPPER	.22 (3)	-.21 (8)	1.62 (7)	2.07 (5)	5.65 (20)
MIDDLE	-.92 (8)	-2.25 (8)	.04 (9)	4.34 (4)	6.46 (5)
LOWER	.10 (10)	.45 (6)	.17 (6)		-1.54 (5)
	0-59	60-119	120-239	240-359	over 360

Minutes

in Subtraction with Regrouping

Item Reactivity (Middle Strata)

Item #	Proportion Correct at B	B Gain	to Reactivity	C
1	.25	.15	+	
2	.33	.06	+	
3	.14	.29	+	
4	.19	.09	+	
5	.47	-.06	+	
6	.11	.12	+	
7	.03	.15	+	
8	.14	.03	+	
9	.22	-.15	F	
10	.08	.06	+	

Grade 2 Mathematics 2M05

Scale Name: Multiplication

Description: Tests the student's knowledge of basic multiplication facts. In five of the items neither factor is greater than 5. In the remaining items one factor is greater than 5 but less than 10.

Example:

$$1 \times 8 = \square$$

(A.) 8

C. 7

B. 9

D. 1

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	0.60	1.92	4.34
	Standard Deviation	2.50	3.37	4.37
	Mean Proportion Correct	.06	.19	.43
	Coefficient Alpha	.67	.80	.88
	Standard Error of Measurement	1.35	1.45	1.41
UPPER STRATA	Mean	1.22	3.92	7.80
	Standard Deviation	2.72	3.55	2.83
	Proportion near Ceiling	.00	.20	.63
MIDDLE STRATA	Mean	-0.37	1.04	3.85
	Standard Deviation	1.18	2.84	3.96
	Proportion near Ceiling	.00	.00	.12
LOWER STRATA	Mean	-0.25	0.68	0.70
	Standard Deviation	1.39	1.77	2.08
	Proportion near Ceiling	.00	.03	.00

Revisions:

This scale has been deleted in favor of including the subtest on fractions. Testing time prohibited the inclusion of both and reactivity at the item level was better for fractions (subtest 2M14).

2M05
Scale Reactivity

A to B

UPPER	2.98* (39)	
MIDDLE	1.34 (35)	2.67 (5)
LOWER	.67 (26)	1.62 (7)

0-9

over 60

Minutes

in Multiplication

* Mean Change
(n)

B to C

UPPER		6.33 (6)	4.25 (20)	3.13 (16)
MIDDLE	.66 (4)	2.39 (6)	3.82 (13)	2.73 (11)
LOWER	-1.46 (8)	.33 (5)	1.07 (9)	-.28 (6)

0-9

10-59

60-119

over 120

Minutes

in Multiplication

Item Reactivity (Middle Strata)

Item #	Proportion Correct at B	B Gain	to C Reactivity
1	.39	-.06	-
2	.28	.12	-
3	.25	.35	-
4	.19	.26	+
5	.08	.15	+
6	.31	.03	+
7	.22	-.15	-
8	.19	.06	+
9	.11	.35	+
10	.36	.21	+

Grade 2 Mathematics 2M06

Scale Name: Addition Speed Test (One minute)Description: Tests the student's ability to recall basic addition facts rapidly. Six items involve the addition algorithm without regrouping.Example:

$\begin{array}{r} 9 \\ + 4 \\ \hline \end{array}$	A. 5	(C) 13
	B. 15	D. 14

Number of Items: 14Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	3.53	6.85	8.73
	Standard Deviation	3.52	4.42	4.66
	Mean Proportion Correct	.24	.49	.62
	Coefficient Alpha	.81	.98	.89
	Standard Error of Measurement	1.46	1.55	1.46
UPPER STRATA	Mean	5.44	9.89	11.64
	Standard Deviation	2.60	3.59	2.28
	Proportion near Ceiling	.02	.48	.58
MIDDLE STRATA	Mean	3.95	7.26	9.15
	Standard Deviation	2.49	3.34	3.46
	Proportion near Ceiling	.00	.14	.44
LOWER STRATA	Mean	1.91	4.72	7.04
	Standard Deviation	2.21	2.98	4.40
	Proportion near Ceiling	.00	.03	.21

Revisions:

None.

A to B

UPPER	3.14* (17)	4.89 (9)	5.60 (15)
MIDDLE	2.64 (30)	3.22 (3)	5.30 (9)
LOWER	2.05 (26)		4.19 (7)
	0-9	10-29	over 30

Minutes

* Mean Change
(n)

in Addition Speed Tests

B to C

UPPER	2.67 (10)	3.63 (9)	1.19 (21)
MIDDLE	1.93 (9)	1.36 (14)	2.72 (12)
LOWER	-.13 (8)	2.92 (8)	3.50 (12)
	0-9	60-119	over 120

Minutes

in Addition Speed Tests

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A	to	B	B	to	C
		Gain	Reactivity	Gain	Reactivity		
1	.91	.02		F	.03		+
2	.84	.05		+	.03		F
3	.60	.23		+	.00		F
4	.33	.40		-	.03		-
5	.35	.47		-	.06		+
6	.40	.42		-	.14		+
7	.26	.42		+	.19		-
8	.33	.28		+	.14		-
9	.21	.21		+	.47		+
10	.07	.23		F	.28		F
11	.07	.16		+	.31		+
12	.07	.14		+	.19		-
13	.02	.23		+	.03		-
14	.02	.12		+	.08		-

Grade 2 Mathematics 2M07

Scale Name: Subtraction Speed Test (1-1/2 minutes)Description: Tests the student's ability to recall basic subtraction facts rapidly. Six items involve the subtraction algorithm without regrouping.Example:

$\begin{array}{r} 8 \\ - 5 \\ \hline \end{array}$	A. 2	<u>C.</u> 3
	B. 4	D. 13

Number of Items: 14Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	2.97	5.20	7.86
SAMPLE	Standard Deviation	3.58	4.78	5.34
	Mean Proportion Correct	.21	.37	.56
	Coefficient Alpha	.77	.87	.91
	Standard Error of Measurement	1.66	1.65	1.57
UPPER	Mean	5.01	8.41	11.51
STRATA	Standard Deviation	2.16	3.54	2.52
	Proportion near Ceiling	.00	.29	.63
MIDDLE	Mean	2.41	5.31	8.62
STRATA	Standard Deviation	2.57	3.37	4.20
	Proportion near Ceiling	.00	.05	.32
LOWER	Mean	1.47	2.83	4.75
STRATA	Standard Deviation	2.64	3.05	4.07
	Proportion near Ceiling	.00	.00	.07

Revisions:

None.

A to B

UPPER	2.86* (22)	3.67 (9)	4.23 (10)
MIDDLE	2.77 (37)	2.89 (3)	
LOWER	1.21 (30)		1.22 (3)
	0-9	10-29	over 30

Minutes

* Mean Change
(n)

in Subtraction Speed Tests

B to C

UPPER	2.80 (13)	2.52 (9)	3.26 (18)	4.22 (3)
MIDDLE	2.86 (12)	3.50 (8)	5.70 (9)	3.20 (5)
LOWER	.48 (9)	1.60 (5)	5.12 (8)	4.00 (6)
	0-9	10-59	60-119	over 120

Minutes

in Subtraction Speed Tests

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A	to	B	B	to	C
		Gain		Reactivity	Gain		Reactivity
1	.64	.11		+	.15		+
2	.55	.16		-	.29		-
3	.55	.23		+	.15		+
4	.39	.32		+	.09		F
5	.39	.28		+	.32		+
6	.27	.34		F	.26		+
7	.09	.41		+	.12		-
8	.11	.25		+	.26		-
9	.18	.05		F	.38		-
10	.18	.09		-	.29		+
11	.09	.14		-	.32		+
12	.09	.11		+	.24		+
13	.05	.05		+	.29		F
14	.00	.25		-	.26		+

Grade 2 Mathematics 2M08

Scale Name: Number Sentences - Equalities and InequalitiesDescription: Tests the student's ability to complete number sentences by selecting the appropriate equality, inequality or operational symbol (<, >, =, +, -).Example:

$5 \bigcirc 5 + 1$ A. > B. < C. =	$7 - 2 = 9 \bigcirc 4$ A. - B. + C. =
--	--

A.

B.

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	2.01	3.89	4.46
	Standard Deviation	3.16	3.84	3.85
	Mean Proportion Correct	.20	.39	.45
	Coefficient Alpha	.68	.74	.78
	Standard Error of Measurement	1.71	1.71	1.73
UPPER STRATA	Mean	4.02	5.91	6.57
	Standard Deviation	2.93	3.56	3.02
	Proportion near Ceiling	.09	.41	.58
MIDDLE STRATA	Mean	1.51	3.91	5.17
	Standard Deviation	2.06	3.36	3.09
	Proportion near Ceiling	.00	.22	.22
LOWER STRATA	Mean	0.30	2.26	1.85
	Standard Deviation	2.06	3.08	3.23
	Proportion near Ceiling	.00	.08	.07

Revisions:

Reduced to 6 items. Based on technical advice and individual testing results it was decided to simplify the lay out and limit the items to the type shown in Sample A above (items #1-5). Items # 1, 2, 5, and 9 were retained with some modifications and two new items were added. Example items and directions for this scale were also revised. Organizationally these 6 items form a subset of the 22 item Computational Transfer scale which also includes items from 2M10 (Number Patterns), 2M15 (Properties), and 2M25 (Missing Addends).

A to B

UPPER

MIDDLE

LOWER

	1.26 * (17)	2.00 (12)	2.88 (12)
2.71 (7)	2.67 (12)	4.17 (3)	1.80 (20)
-.35 (10)	3.17 (6)	6.33 (3)	2.18 (14)

0-9

10-59

60-119

over 120

Minutes

* Mean Change
(n)

In Equalities & Inequalities

B to C

UPPER

MIDDLE

LOWER

1.25 (10)	.63 (24)	.33 (3)	.30 (5)
2.43 (7)	1.29 (14)	2.43 (7)	-.13 (8)
-.82 (14)	.70 (5)	.25 (6)	.00 (4)

0-9

10-59

60-119

over 120

Minutes

in Equalities & Inequalities

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A to B		B to C	
		Gain	Reactivity	Gain	Reactivity
1	.37	.26	-	.19	F
2	.42	.19	-	.08	-
3	.37	.17	-	.06	-
4	.35	.31	-	.08	-
5	.40	.21	-	.22	-
6	.35	.12	-	.08	-
7	.21	.29	F	.14	-
8	.16	.12	+	.08	+
9	.14	.29	+	.22	F
10	.26	.05	+	.14	+

Grade 2 Mathematics 2M09

Scale Name: Renaming Numerals

Description: Requires the recognition of equations which rename or do not rename a specific numeral. Eighteen of the equations involve basic addition, subtraction, or multiplication facts. There are 14 "Yes" equations 10 "No" equations.

Example:

Does the number sentence name the number 8?

A. $6+2=\square$ YES NO D. $\square=3+5$ YES NO
 B. $\square=9-3$ YES NO E. $10-2=\square$ YES NO
 C. $2\times4=\square$ YES NO F. $\square=18-8$ YES NO

Number of Items: 24 (4 items with 6 equations each)Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	5.65	10.90	15.67
	Standard Deviation	6.14	7.97	8.07
	Mean Proportion Correct	.24	.45	.65
	Coefficient Alpha	.70	.83	.87
	Standard Error of Measurement	3.32	3.26	2.90
UPPER STRATA	Mean	10.42	17.04	21.30
	Standard Deviation	4.86	5.10	3.83
	Proportion near Ceiling	.04	.33	.94
MIDDLE STRATA	Mean	4.39	10.75	16.50
	Standard Deviation	4.08	6.34	6.07
	Proportion near Ceiling	.00	.11	.38
LOWER STRATA	Mean	2.34	2.16	10.75
	Standard Deviation	4.25	5.53	6.81
	Proportion near Ceiling	.00	.03	.11

Revisions:

This scale has been deleted from the final test battery, but was used intact as part of the screening (classroom selection) test.

Scale Reactivity

A to B

UPPER	4.00* (4)	9.60 (10)	6.22 (9)	7.09 (11)	4.43 (7)
MIDDLE	3.20 (10)	2.00 (3)	11.25 (4)	8.21 (14)	7.18 (11)
LOWER	.60 (15)		6.33 (3)	8.00 (5)	4.50 (10)
	0-9	10-59	60-119	120-239	over 240

Minutes
in "Family of Facts"

* Mean Change
(n)

B to C

UPPER	3.71 (24)	8.40 (5)	4.50 (14)	
MIDDLE	4.50 (14)	14.33 (3)	6.79 (14)	7.33 (3)
LOWER	5.70 (10)	12.33 (3)	2.11 (9)	5.83 (6)
	0-59	60-119	120-239	over 240

Minutes
in "Family of Facts"

Grade 2 Mathematics 2M10

Scale Name: Number PatternsDescription: Requires the identification of the missing numeral or the "rule" by which it can be found.Example:

What number comes next?

10, 8, 6, ____

A. 7 B. 5 C. 4 D. 2Number of Items: 6Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	1.73	2.80	3.75
	Standard Deviation	1.92	2.22	2.19
	Mean Proportion Correct	.29	.47	.63
	Coefficient Alpha	.53	.67	.73
	Standard Error of Measurement	1.21	1.16	1.03
UPPER STRATA	Mean	2.77	4.08	4.99
	Standard Deviation	1.50	1.84	1.30
	Proportion near Ceiling	.16	.63	.74
MIDDLE STRATA	Mean	1.97	2.82	3.80
	Standard Deviation	1.42	1.35	1.98
	Proportion near Ceiling	.02	.21	.53
LOWER STRATA	Mean	1.43	1.94	3.09
	Standard Deviation	1.67	2.02	1.29
	Proportion near Ceiling	.06	.16	.17

Revisions:

Items 3 and 4 were dropped based on item reactivity. Items 5 and 6 were revised. Two new items were written following the format of items 1 and 2 but more difficult. Items no longer require the identification of the "rule" as items 3 and 4 did. The subsequent scale was incorporated into the 22 item Computational Transfer scale. See comments under 2M08.

A to B

UPPER	1.87* (5)	.60 (10)	1.48 (14)	1.64 (12)
MIDDLE	-.07 (9)	.67 (13)	1.73 (6)	1.52 (14)
LOWER	.49 (13)	.61 (6)	.33 (7)	.81 (7)

0-9

10-59

60-119

over 120

Minutes

in Number Patterns

* Mean Change
(n)

B to C

UPPER	.82 (15)	1.80 (5)	.30 (9)	1.48 (14)
MIDDLE	1.22 (9)	.89 (3)	2.00 (6)	.92 (16)
LOWER	.08 (8)	-.09 (4)		1.61 (17)

0-9

10-59

60-120

over 120

Minutes

in Number Patterns

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A to B		B to C	
		Gain	Reactivity	Gain	Reactivity
1	.70	.17	+	.06	+
2	.70	.05	+	.15	+
3	.30	.02	F	.38	+
4	.05	.05	F	.26	-
5	.43	.31	F	.06	F
6	.57	.14	+	.12	+

Grade 2 Mathematics 2M12A

Scale Name: Numerals

Description: Tests the student's ability to order numerals and to select the one within a group that is the largest, smallest, next in the counting sequence, or between two other numerals.

Example:

What number comes right after 889?

A. 899

C. 890

B. 880

D. 900

Number of Items: 5Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	0.86	1.57	2.71
	Standard Deviation	1.64	1.93	2.04
	Mean Proportion Correct	.17	.31	.54
	Coefficient Alpha	.37	.56	.66
	Standard Error of Measurement	1.17	1.15	1.07
UPPER STRATA	Mean	1.63	2.56	3.80
	Standard Deviation	1.52	1.49	1.30
	Proportion near Ceiling	.16	.36	.72
MIDDLE STRATA	Mean	0.64	1.56	2.98
	Standard Deviation	1.56	1.84	1.76
	Proportion near Ceiling	.07	.21	.58
LOWER STRATA	Mean	0.12	0.58	1.79
	Standard Deviation	1.31	1.51	1.94
	Proportion near Ceiling	.03	.03	.21

Revisions:

Expanded to a 10 item scale and incorporated as a subset of the 25 item Place Value/Numerals scale. Revisions made were in the use of pictures and the wording of items.

A to B

UPPER	1.49* (15)	1.43 (7)	.50 (14)	-.13 (5)
MIDDLE	.89 (6)	2.33 (6)	.94 (18)	.45 (12)
LOWER	.00 (5)		.75 (12)	.73 (15)
	0-9	10-59	60-119	over 120

Minutes

* Mean Change
 (n)

in Numerals and Ordinals

B to C

UPPER	1.21 (30)		1.59 (9)	.89 (3)
MIDDLE	1.62 (13)	1.33 (4)	1.97 (11)	.88 (8)
LOWER	.78 (6)	.95 (6)	1.59 (9)	.71 (8)
	0-9	10-59	60-119	over 120

Minutes

in Numerals

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A	to	B	B	to	C
		Gain		Reactivity	Gain		Reactivity
1	.42	.16		F	.25		+
2	.37	.00		-	.28		F
3	.26	.21		+	.19		-
4	.30	.16		F	.28		F
5	.21	.26		-	.19		-

Grade 2 Mathematics

2M12B

Scale Name:

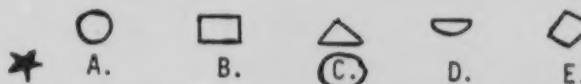
Ordinals

Description:

Tests the student's knowledge of ordinal numbers.

Example:

Starting from the ★, which shape is the third one?

Number of Items:

5

Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	2.04	3.12	3.56
	Standard Deviation	1.64	1.70	1.47
	Mean Proportion Correct	.41	.62	.71
	Coefficient Alpha	.46	.58	.49
	Standard Error of Measurement	1.08	0.98	0.94
UPPER STRATA	Mean	3.07	3.96	4.11
	Standard Deviation	1.15	1.27	1.05
	Proportion near Ceiling	.47	.73	.82
MIDDLE STRATA	Mean	2.32	3.24	3.68
	Standard Deviation	1.39	1.36	1.18
	Proportion near Ceiling	.27	.54	.69
LOWER STRATA	Mean	1.49	2.51	2.96
	Standard Deviation	1.44	1.52	1.52
	Proportion near Ceiling	.14	.38	.55

Revisions:

Deleted due to lack of instructional time as well as the high ceiling effect.

A to B

UPPER	1.06 * (15)	1.42 (7)	.67 (14)	.43 (5)
MIDDLE	.68 (6)	2.31 (6)	.84 (18)	.43 (12)
LOWER	1.60 (5)		.97 (12)	.79 (15)
	0-9	10-59	60-119	over 120

Minutes
in Numerals and Ordinals

* Mean Change
(n)

B to C

UPPER	.22 (34)	-.63 (6)
MIDDLE	.74 (25)	.53 (9)
LOWER	.61 (22)	-.03 (5)
	0-9	10-29

Minutes
in Ordinals

Grade 2 Mathematics 2M13

Scale Name: Place Value

Description: Tests the student's knowledge of place value concepts involving hundreds, tens, and ones. Five items involve pictorial representation. Expanded notation is used in three items.

Example:

Which number means 3 TENS and 2 ONES?

A. 23 C. 302

☒ B. 32 D. 320Number of Items: 15Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	3.97	6.51	9.89
	Standard Deviation	4.28	5.31	5.29
	Mean Proportion Correct	.26	.43	.66
	Coefficient Alpha	.75	.86	.89
	Standard Error of Measurement	2.06	1.95	1.71
UPPER STRATA	Mean	7.04	10.82	13.66
	Standard Deviation	3.48	3.60	2.10
	Proportion near Ceiling	.13	.51	.88
MIDDLE STRATA	Mean	3.62	6.35	10.53
	Standard Deviation	1.50	3.38	4.18
	Proportion near Ceiling	.00	.07	.52
LOWER STRATA	Mean	1.50	2.92	6.35
	Standard Deviation	2.34	3.36	4.65
	Proportion near Ceiling	.00	.00	.18

Revisions:

Items 1, 2, 7, and 12 were dropped and items 6 and 13 were modified. Revisions were made throughout in the lay out, type of pictorial representation, and in the wording of questions.

A to B

UPPER

MIDDLE

LOWER

1.77* (3)	3.78 (20)	2.33 (6)	5.29 (12)
1.67 (4)	3.84 (19)	-.05 (10)	4.28 (9)
2.24 (7)	1.47 (14)	.08 (8)	-.04 (4)

0-9 10-59 60-119 over 120

Minutes
in Place Value

* Mean Change
(n)

B to C

UPPER

MIDDLE

LOWER

1.60 (13)	3.28 (12)	3.23 (5)	3.12 (13)
2.69 (9)	3.20 (6)	5.92 (6)	4.33 (13)
	4.73 (8)	4.17 (4)	3.85 (14)

0-9 10-119 120-239 over 240

Minutes
in Place Value

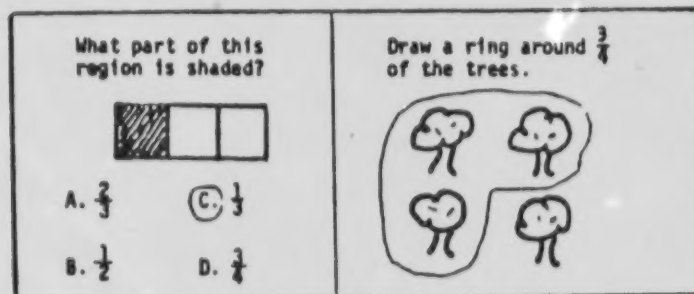
Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A to B		B to C	
		Gain	Reactivity	Gain	Reactivity
1	.86	.07	+	.06	+
2	.89	.05	+	.09	+
3	.41	.25	+	.15	+
4	.43	.07	-	.29	+
5	.11	.11	+	.35	+
6	.55	.27	-	.12	F
7	.55	.18	-	.18	-
8	.18	.20	-	.32	+
9	.59	-.05	-	.26	-
10	.36	.16	-	.29	+
11	.36	.18	-	.03	F
12	.34	.16	+	.15	F
13	.18	.14	+	.29	F
14	.20	.16	-	.21	-
15	.16	.16	F	.32	+

Grade 2 Mathematics 2M14

Scale Name: Fractions

Description: Requires the student to recognize or identify a fractional part ($1/4$, $1/3$, $1/2$, $2/3$, $3/4$) of a set, region, or line. Three items involve fractional relationships.

Example:Number of Items: 13Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	0.19	1.38	4.14
	Standard Deviation	2.61	4.06	4.76
	Mean Proportion Correct	.02	.11	.32
	Coefficient Alpha	.07	.58	.70
	Standard Error of Measurement	2.41	2.54	2.53
UPPER STRATA	Mean	0.10	2.11	6.64
	Standard Deviation	3.23	4.06	4.69
	Proportion near Ceiling	.00	.04	.33
MIDDLE STRATA	Mean	0.04	0.93	3.60
	Standard Deviation	3.09	3.49	4.60
	Proportion near Ceiling	.00	.02	.09
LOWER STRATA	Mean	0.10	0.37	1.36
	Standard Deviation	2.31	2.99	2.48
	Proportion near Ceiling	.00	.00	.00

Revisions:

Items #11-13 ("Yes" and "No" choice) were dropped and the remaining ten were retained. Items 3, 5, 6, and 7 will be administered at "B" and the full 10 item scale will be given at the "C" and "D" test points.

A to B

UPPER	.22* (6)	.14 (5)	3.14 (14)	1.92 (16)
MIDDLE	.54 (13)		1.00 (12)	.78 (15)
LOWER	1.46 (11)		-.89 (9)	.26 (13)

0-9 10-29 30-59 over 60
Minutes
in Fractions

* Mean Change
(n)

B to C

UPPER	1.42 (11)	5.67 (18)	5.61 (12)
MIDDLE	-.39 (16)	6.80 (10)	2.46 (8)
LOWER	.61 (71)	3.86 (7)	-2.07 (5)

0-9 60-119 over 120
Minutes
in Fractions

Item Reactivity (Middle Strata)

Item #	Proportion Correct at B	B Gain	to C Reactivity
1	.28	.38	+
3	.36	.24	F
5	.72	.09	+
6	.42	.15	+
7	.47	.12	F
8	.36	.03	+
9	.44	.15	+
10	.25	.15	+
11	.50	-.09	+
12	.67	.06	+
13	.44	.12	+

*Item reactivity data is unavailable for items #2 and #4.

Grade 2 Mathematics 2M15

Scale Name: Properties

Description: Tests the student's knowledge of the associative property of addition, the commutative property of addition and multiplication, and the identity element of addition.

Example:

$\square + 3 = 3 + 1$			
A. 1	C. 2		
B. 4	D. 0		

Number of Items: 8Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	2.44	4.03	4.95
	Standard Deviation	3.12	3.29	3.30
	Mean Proportion Correct	.31	.50	.62
	Coefficient Alpha	.80	.83	.86
	Standard Error of Measurement	1.32	1.26	1.16
UPPER STRATA	Mean	4.23	6.14	6.90
	Standard Deviation	3.01	2.11	1.60
	Proportion near Ceiling	.36	.60	.79
MIDDLE STRATA	Mean	2.68	4.27	5.58
	Standard Deviation	2.65	2.90	2.78
	Proportion near Ceiling	.13	.34	.59
LOWER STRATA	Mean	0.43	2.69	3.29
	Standard Deviation	1.90	3.14	3.07
	Proportion near Ceiling	.00	.18	.32

Revisions:

Items 3 and 8 were retained and items 4, 5, and 7 were modified by the inclusion of larger numbers. A sixth item similar to #3 was added. These items form a subset of the 22 item Computational Transfer scale. See comments under 2M08.

A to B

UPPER	2.44* (13)	2.06 (11)	2.52 (9)	1.42 (8)
MIDDLE	1.05 (21)	1.67 (5)	2.67 (5)	2.33 (11)
LOWER	2.65 (17)	1.33 (6)	-.55 (3)	3.24 (7)
	0-9	10-59	60-119	over 120

Minutes
in Properties

* Mean Change
(n)

B to C

UPPER	.70 (30)	.89 (12)
MIDDLE	1.45 (28)	.44 (6)
LOWER	.03 (25)	
	0-10	over 120

Minutes
in Properties

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B Gain	to Reactivity	C
1	.70	.00	F	.21	-	
2	.55	.17	+	.09	+	
3	.48	.21	F	.18	+	
4	.41	.00	+	.21	F	
5	.50	.10	-	.18	-	
6	.23	.26	+	.15	-	
7	.43	.36	+	-.03	-	
8	.39	.26	F	.09	+	

Grade 2 Mathematics

2M16

Scale Name:

Associative Property With Expanded Notation

Description:

Requires the use of expanded notation (tens and ones place only) and the application of the associative property.

Example:Another way to write $23 + 17$ is:

A. $(2+3) + (1+7)$

B. $(20+10) + (3+7)$

C. $2 + (3 + 1 + 7)$

Number of Items:

4

Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	-0.12	.12	.50
	Standard Deviation	1.35	1.85	2.20
	Mean Proportion Correct	-0.03	.03	.12
	Coefficient Alpha	.43	.66	.76
	Standard Error of Measurement	0.88	0.93	0.93
UPPER STRATA	Mean	-0.44	0.29	0.87
	Standard Deviation	1.50	2.13	2.39
	Proportion near Ceiling	.07	.22	.35
MIDDLE STRATA	Mean	-0.21	-0.38	-0.06
	Standard Deviation	1.32	1.52	1.90
	Proportion near Ceiling	.11	.07	.18
LOWER STRATA	Mean	-0.20	-0.30	-0.39
	Standard Deviation	0.93	1.37	1.75
	Proportion near Ceiling	.03	.05	.11

Revisions:

This scale has been deleted as it is more reactive to ability than to instruction.

A to B

UPPER	.58* (20)	1.36 (11)	.65 (10)
MIDDLE	-.10 (30)	-.61 (9)	.33 (3)
LOWER	.15 (27)	.67 (3)	- 2.50 (3)
	0-9	10-29	over 30

* Mean Change
(n)

Minutes
in Associative Property with
Expanded Notation

B to C

UPPER	.71 (17)	.08 (12)	.75 (6)	.38 (8)
MIDDLE	-.79 (17)	2.00 (4)	.50 (6)	.86 (7)
LOWER	.13 (16)		-.40 (5)	-.30 (5)
	0-59	60-119	240-359	over 360

Minutes
in Associative Property with
Expanded Notation

Grade 2 Mathematics 2M17

Scale Name: MoneyDescription: Requires the student to identify the sum of a set of coins (4 items) or to solve equations which are represented by two or more sets of coins (4 items).Example:

How much money is shown here?



- A. 35¢
 B. 40¢
 C. 25¢
 D. 20¢

Number of Items: 8Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	2.44	4.15	5.69
	Standard Deviation	2.48	2.62	2.29
	Mean Proportion Correct	.31	.52	.71
	Coefficient Alpha	.65	.69	.69
	Standard Error of Measurement	1.37	1.36	1.19
UPPER STRATA	Mean	4.23	5.40	6.67
	Standard Deviation	1.80	2.04	1.56
	Proportion near Ceiling	.14	.44	.74
MIDDLE STRATA	Mean	2.87	4.38	5.83
	Standard Deviation	2.11	2.36	2.13
	Proportion near Ceiling	.04	.26	.50
LOWER STRATA	Mean	1.41	3.22	5.47
	Standard Deviation	1.97	2.17	2.01
	Proportion near Ceiling	.03	.08	.41

Revisions:

Expanded to a 10 item scale. The four items involving sums of a set (items #1-4) were retained although item #1 was revised to increase its difficulty. In response to technical advice the four items involving equations (items #5-8) were replaced with items testing recognition of coin equivalency.

Scale Reactivity

A to B

UPPER	1.59* (4)	.47 (17)	1.58 (8)	2.20 (12)
MIDDLE	2.39 (11)	1.03 (11)		1.42 (19)
LOWER	1.06 (11)	1.21 (8)		2.44 (13)
	0-9	10-29	30-59	over 60

Minutes
in Money

* Mean Change
(n)

B to C

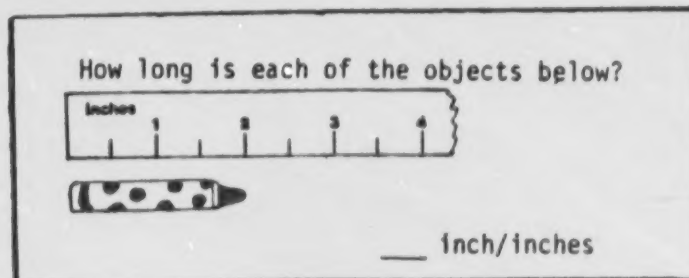
UPPER	.44 (3)	.85 (11)	1.33 (3)	1.87 (23)
MIDDLE	1.29 (7)	1.00 (13)	-.11 (3)	3.45 (12)
LOWER	1.71 (7)	2.79 (13)		4.22 (6)
	0-9	10-59	60-119	over 120

Minutes
in Money

Item Reactivity (Middle Strata)

Item #	Proportion Correct at B	B Gain	to Reactivity	C
1	.91	.09	-	
2	.80	.14	+	
3	.71	.09	+	
4	.26	.46	+	
5	.69	.20	+	
6	.74	.09	+	
7	.43	.31	+	
8	.29	.11	F	

Grade 2 Mathematics 2M18

Scale Name: Linear MeasurementDescription: Requires the student to estimate the length or height of an object when both object and ruler are presented pictorially. Items are open ended.Example:Number of Items: 6Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	-0.11*	0.56	1.00
	Standard Deviation	3.06	3.24	3.39
	Mean Proportion Correct	-0.02	.09	.14
	Coefficient Alpha	.68	.70	.74
	Standard Error of Measurement	1.57	1.61	1.57
UPPER STRATA	Mean	-0.18	1.40	1.58
	Standard Deviation	2.77	3.40	3.69
	Proportion near Ceiling	.00	.13	.19
MIDDLE STRATA	Mean	-0.83	0.46	0.88
	Standard Deviation	2.74	3.05	2.96
	Proportion near Ceiling	.00	.00	.09
LOWER STRATA	Mean	-0.83	0.08	0.62
	Standard Deviation	2.92	2.57	3.47
	Proportion near Ceiling	.00	.03	.24

Revisions:

In response to technical advice this scale was expanded to an 11 item multiple choice subtest with inclusion of measurement to the nearest $\frac{1}{2}$ inch and discrimination between length, height, and width.

* Note: The absolute level of scores presented here is misleading because the correction for guessing was applied as for a 2-choice item, thus over correcting and lowering scores. Since the same correction was used at all testing occasions, reactivity data are interpretable as on other scales.

A to B

UPPER	1.53 * (19)	1.83 (12)	1.80 (10)
MIDDLE	.30 (23)	1.50 (4)	2.20 (15)
LOWER	-.33 (18)	1.20 (5)	1.80 (10)
	0-9	30-59	over 60

Minutes
in Linear Measurement

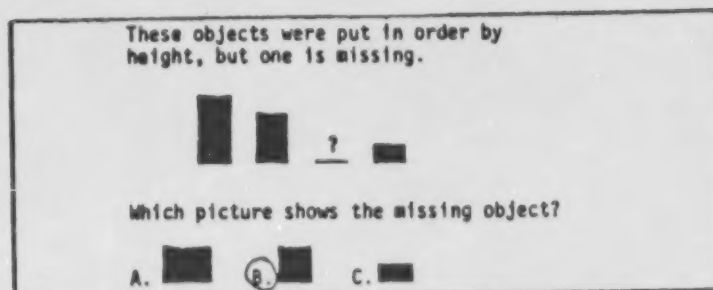
* Mean Change
(n)

B to C

UPPER	-.52 (23)	- 1.75 (4)	- .29 (7)	3.56 (9)
MIDDLE	.70 (20)	.00 (5)	1.67 (6)	1.33 (3)
LOWER	1.17 (18)	.00 (6)	- .40 (5)	
	0-9	10-29	30-59	over 60

Minutes
in Linear Measurement

Grade 2 Mathematics 2M19

Scale Name: Measurement ConceptsDescription: Items involve the concepts of order, capacity, and conservation of length.Example:Number of Items: 4Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	1.20	1.85	2.36
	Standard Deviation	1.40	1.40	1.19
	Mean Proportion Correct	.30	.46	.59
	Coefficient Alpha	.31	.28	.17
	Standard Error of Measurement	1.01	1.03	0.94
UPPER STRATA	Mean	1.87	2.45	2.85
	Standard Deviation	1.30	1.30	0.99
	Proportion near Ceiling	.36	.51	.76
MIDDLE STRATA	Mean	1.37	1.69	2.20
	Standard Deviation	1.47	1.54	1.34
	Proportion near Ceiling	.29	.45	.58
LOWER STRATA	Mean	0.74	1.31	1.96
	Standard Deviation	1.50	1.34	1.13
	Proportion near Ceiling	.14	.30	.41

Revisions:

Deleted due to lack of instructional time and difficulty of testing these concepts in a paper and pencil format.

A to B

UPPER	.74* (29)	.26 (12)
MIDDLE	.18 (25)	.59 (17)
LOWER	.61 (21)	.24 (11)

0-9

30-59

Minutes
in Measurement Concepts

* Mean Change
(n)

B to C

UPPER	.32 (25)		.83 (5)	.65 (9)
MIDDLE	.27 (21)	-.04 (4)	1.42 (6)	1.46 (4)
LOWER	.72 (22)		.50 (4)	

0-9

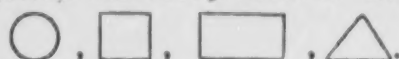
10-29

30-59

over 60

Minutes
in Measurement Concepts

Grade 2 Mathematics 2M20

Scale Name: Geometric FiguresDescription: Requires the recognition of the following geometric figures:Example:

Which of these shapes is a triangle?			
A.		B.	
C.		D.	

Number of Items: 6Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	3.64	4.85	5.15
	Standard Deviation	2.13	1.57	1.34
	Mean Proportion Correct	.61	.81	.86
	Coefficient Alpha	.76	.64	.59
	Standard Error of Measurement	0.96	0.86	0.78
UPPER STRATA	Mean	4.95	5.71	5.63
	Standard Deviation	1.25	0.61	0.83
	Proportion near Ceiling	.75	.93	.93
MIDDLE STRATA	Mean	4.12	4.73	5.00
	Standard Deviation	1.91	1.59	1.50
	Proportion near Ceiling	.58	.72	.78
LOWER STRATA	Mean	3.52	4.36	4.72
	Standard Deviation	1.64	1.76	1.45
	Proportion near Ceiling	.30	.62	.66

Revisions:

Deleted due to testing time limitations and lack of reactivity due to strong ceiling effects.

A to B

UPPER	.64* (13)	1.20 (5)	.77 (10)	.72 (13)
MIDDLE	1.31 (14)	.00 (3)	.40 (16)	-.11 (9)
LOWER	.24 (11)	1.22 (3)	.70 (9)	1.60 (10)
	0-9	10-29	30-59	over 60

Minutes

in Geometric Figures

* Mean Change
(n)

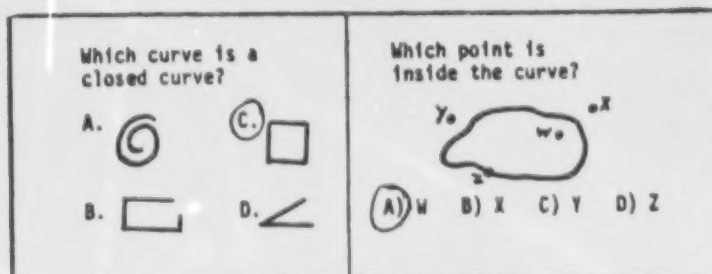
B to C

UPPER	-.08 (8)	-.61 (11)	.18 (19)
MIDDLE	.14 (14)	.27 (10)	.33 (11)
LOWER	.43 (17)		-.05 (7)
	0-9	10-59	over 60

Minutes

in Geometric Figures

Grade 2 Mathematics 2M21

Scale Name: Curves and PointsDescription: Requires recognition of open, closed, and simple closed curves. Points inside, outside, and on a curve.Example:Number of Items: 8Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	3.58	5.75	6.36
	Standard Deviation	2.70	2.08	1.84
	Mean Proportion Correct	.45	.72	.80
	Coefficient Alpha	.75	.61	.57
	Standard Error of Measurement	1.28	1.22	1.12
UPPER STRATA	Mean	5.53	6.56	6.80
	Standard Deviation	1.74	1.60	1.48
	Proportion near Ceiling	.41	.65	.71
MIDDLE STRATA	Mean	4.30	6.05	6.82
	Standard Deviation	2.48	1.94	1.43
	Proportion near Ceiling	.29	.55	.69
LOWER STRATA	Mean	3.04	5.12	5.88
	Standard Deviation	2.15	1.81	1.86
	Proportion near Ceiling	.08	.35	.52

Revisions:

Deleted for same reasons as 2M20.

A to B

UPPER	1.18* (17)	.76 (7)	1.37 (9)	.79 (8)
MIDDLE	.94 (17)	2.09 (7)	1.17 (4)	2.38 (.4)
LOWER	2.26 (17)	2.00 (7)		1.00 (7)
	0-9	10-29	30-59	over 60

Minutes

* Mean Change
(n)

in Curves and Points

B to C

UPPER	-.11 (21)		.48 (16)	
MIDDLE	.96 (18)		.76 (11)	.67 (4)
LOWER	.89 (19)	.44 (3)	2.50 (4)	
	0-9	10-29	30-59	over 60

Minutes

in Curves and Points

Grade 2 Mathematics 2M22

Scale Name: Word ProblemsDescription: Tests the student's ability to solve word problems which involve addition and subtraction (with and without regrouping), the joining of equivalent sets, partitioning of sets, time, and money.Example:

Susan baked 25 cookies. Gregg and Lisa
at 15 of them. How many cookies are left?

A. 15 **B. 10** C. 5 D. 20

Number of Items: 15Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	3.57	6.27	8.91
	Standard Deviation	4.08	4.48	4.60
	Mean Proportion Correct	.29	.42	.59
	Coefficient Alpha	.70	.76	.81
	Standard Error of Measurement	2.16	2.12	1.96
UPPER STRATA	Mean	6.34	8.76	11.50
	Standard Deviation	3.11	3.38	2.83
	Proportion near Ceiling	.02	.22	.58
MIDDLE STRATA	Mean	3.93	6.43	9.70
	Standard Deviation	2.95	3.41	3.07
	Proportion near Ceiling	.00	.07	.29
LOWER STRATA	Mean	1.86	3.82	6.26
	Standard Deviation	2.50	2.80	3.85
	Proportion near Ceiling	.00	.03	.07

Revisions:

Retained with minor revisions in wording and illustrations.

A to B

UPPER	2.90* (7)	1.98 (22)	3.38 (7)	3.73 (5)
MIDDLE	1.79 (14)	2.20 (20)	2.89 (3)	3.87 (5)
LOWER	.68 (11)	2.23 (16)		1.53 (5)
	0-9	10-59	60-119	over 120

Minutes

in Word Problems

* Mean Change
(n)

B to C

UPPER	3.47 (15)	3.28 (6)	2.80 (18)	2.33 (3)
MIDDLE	4.23 (13)	3.13 (5)	3.18 (11)	3.25 (4)
LOWER	3.41 (13)	1.60 (5)	1.56 (6)	2.67 (4)
	0-59	60-119	120-239	over 360

Minutes

in Word Problems

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B Gain	to Reactivity	C Gain	to Reactivity
1	.73	.05	+	.12	-		
2	.64	.30	+	-.15	+		
3	.48	.23	-	.18	+		
4	.20	.23	F	.15	+		
5	.66	.02	-	.18	-		
6	.39	.07	+	.15	F		
7	.48	.14	-	.18	F		
8	.77	.00	+	.26	-		
9	.30	.14	+	.44	F		
10	.25	.16	+	.32	-		
11	.75	.05	+	.09	+		
12	.27	.14	F	.15	+		
13	.16	.41	-	.12	+		
14	.30	-.02	F	.26	-		
15	.20	-.02	F	.26	-		

Grade 2 Mathematics 2M25

Scale Name: Missing Addends

Description: Tests the student's ability to complete an open sentence by selecting the number that will make the sentence into a true statement. In testing 4 of the items were imbedded in the 2M01 scale and 4 were in 2M03. Data previously reported for 2M01 and 2M03 does not include these items.

Example:

$7 - \square = 4$			
(A) 3	B. 4	C. 11	D. 5

Number of Items: 8Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	1.68	2.42	3.64
	Standard Deviation	2.07	2.45	2.55
	Mean Proportion Correct	.21	.30	.46
	Coefficient Alpha	.52	.62	.66
	Standard Error of Measurement	1.34	1.42	1.39
UPPER STRATA	Mean	2.61	3.88	5.02
	Standard Deviation	1.75	2.09	1.73
	Proportion near Ceiling	.00	.14	.28
MIDDLE STRATA	Mean	0.92	1.75	3.96
	Standard Deviation	1.55	2.24	2.23
	Proportion near Ceiling	.00	.05	.19
LOWER STRATA	Mean	0.96	1.69	2.10
	Standard Deviation	1.73	1.78	2.07
	Proportion near Ceiling	.00	.00	.00

Revisions:

Based on individual testing results and consultant advice items 2, 4, 6, and 7 where the sum or difference appeared in the initial position were eliminated as too confusing (i.e., item #2: $1 = \square - 6$ was most frequently solved by reading from the right and obtaining 5 as an answer). Items 1 and 3 were revised and two additional missing addend items in the vertical format were added. These four items form a subset of the Computational Transfer scale.

A to B

UPPER	1.00* (4)	.89 (19)	2.41 (9)	1.04 (9)
MIDDLE	-.23 (10)	2.00 (8)	1.10 (10)	.93 (14)
LOWER	.29 (14)	1.45 (6)	1.78 (3)	1.07 (10)
	0-9	10-59	60-119	over 120

Minutes

in Missing Addends

* Mean Change
(n)

B to C

UPPER	1.35 (17)	1.07 (10)	.55 (6)	1.63 (9)
MIDDLE	2.74 (9)	2.89 (3)	2.58 (8)	1.73 (16)
LOWER	1.61 (6)		.76 (7)	.44 (16)
	0-9	10-59	60-119	over 120

Minutes

in Missing Addends

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B Gain	to Reactivity	C Gain	to Reactivity
1	.53	.19	+	.19	-	-	-
2	.09	.19	+	-.16	-	F	-
3	.21	.17	F	.33	-	-	-
4	.07	.10	+	.17	-	F	-
5	.56	.00	-	.28	-	F	-
6	.23	.14	-	.19	-	-	-
7	.12	.05	F	.42	-	-	-
8	.09	.07	F	.36	-	F	-

GRADE 5 READING

Sample Sizes:

	Test Occasion		
	A	B	C
TOTAL SAMPLE	173*	165	153
UPPER STRATA	27	27	24
MIDDLE STRATA	50	50	42
LOWER STRATA	29	29	15

* All figures represent the total number of students tested. On any one subtest, missing data could reduce the number of students contributing.

Grade 5 Reading 5R01

Scale Name: Decoding Variant ConsonantsDescription: The student must identify the correct pronunciation of the letters "g" and "c" in specific words.Example:

gentle	k	s	g	(j)
city	k	(s)	g	j

Number of Items: 12Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	8.28	8.91	9.32
SAMPLE	Standard Deviation	3.03	2.42	2.26
	Mean Proportion Correct	.69	.74	.78
	Coefficient Alpha	.71	.61	.59
	Standard Error of Measurement	1.57	1.44	1.39
UPPER	Mean	10.28	10.53	10.03
STRATA	Standard Deviation	1.21	1.38	1.92
	Proportion near Ceiling	.65	.58	.58
MIDDLE	Mean	8.85	9.23	9.96
STRATA	Standard Deviation	2.19	1.94	1.45
	Proportion near Ceiling	.30	.41	.53
LOWER	Mean	7.11	8.17	8.42
STRATA	Standard Deviation	2.72	1.74	1.74
	Proportion near Ceiling	.14	.11	.20

Revisions:

This scale was dropped from the battery due to high scores and low time allocations.

A to B

UPPER	0.25* (25)	
MIDDLE	0.36 (44)	
LOWER	1.09 (22)	0.27 (5)
	0-10	over 10

Minutes

in Variant Consonants

B to C

UPPER	-0.46 (13)	-0.43 (10)
MIDDLE	0.70 (22)	0.39 (16)
LOWER	-0.08 (13)	0.67 (2)
	0-10	over 10

Minutes

in Variant Consonants

*Mean Change
(n)

Grade 5 Reading

5R02

Scale Name:

Decoding Long and Short Vowels

Description:

The student must identify the correct pronunciation of a vowel in a word. Some nonsense words are included. Syllable patterns tested include consonant-vowel, consonant-vowel-consonant, and consonant-vowel-consonant-final e. Some irregular patterns are included.

Example:

deviate	e	ē	i	ī
history	e	ē	ī	ī
strine	e	ē	i	ī
bread	e	ē	i	ī

Number of Items: 21Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	12.75	14.84	15.41
	Standard Deviation	7.08	6.49	6.47
	Mean Proportion Correct	.61	.71	.73
	Coefficient Alpha	.90	.90	.90
	Standard Error of Measurement	2.22	2.05	1.95
UPPER STRATA	Mean	18.78	19.51	19.95
	Standard Deviation	2.41	1.74	1.42
	Proportion near Ceiling	.77	.92	.96
MIDDLE STRATA	Mean	14.41	16.66	17.16
	Standard Deviation	4.90	4.09	4.28
	Proportion near Ceiling	.44	.67	.70
LOWER STRATA	Mean	7.62	10.43	12.49
	Standard Deviation	5.85	6.68	7.22
	Proportion near Ceiling	.14	.18	.40

Revisions:

This scale was dropped from the battery due to high scores and low time allocations. It was used in the selection test.

5R2
Scale Reactivity

A to B

UPPER	1.41* (9)	0.24 (15)	
MIDDLE	2.19 (34)	2.80 (5)	1.39 (6)
LOWER	1.54 (11)	4.00 (8)	1.17 (8)
	0-10	11-60 Minutes	over 60

in Long and Short Vowels

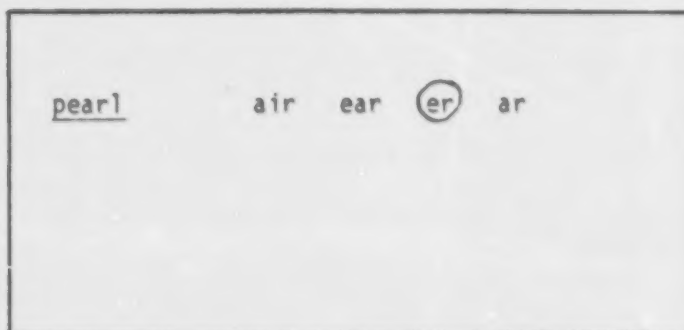
B to C

UPPER	0.48 (14)	0.00 (9)
MIDDLE	-0.22 (21)	1.47 (17)
LOWER	-1.60 (5)	0.77 (10)
	0-10	over 10 Minutes

in Long Vowels

*Mean Change
 (n)

Grade 5 Reading 5R03

Scale Name: Decoding Vowels with "r"Description: The student must identify the correct pronunciation of a vowel followed by the letter "r".Example:Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	7.28	8.33	8.41
	Standard Deviation	3.32	2.65	2.73
	Mean Proportion Correct	.73	.83	.84
	Coefficient Alpha	.84	.82	.84
	Standard Error of Measurement	1.26	1.06	1.04
UPPER STRATA	Mean	9.56	9.83	9.83
	Standard Deviation	0.88	0.63	0.45
	Proportion near Ceiling	.89	.96	1.00
MIDDLE STRATA	Mean	8.31	8.57	9.43
	Standard Deviation	2.22	2.39	1.26
	Proportion near Ceiling	.69	.78	.90
LOWER STRATA	Mean	5.05	7.14	7.96
	Standard Deviation	2.84	2.54	2.46
	Proportion near Ceiling	.21	.41	.53

Revisions:

This scale was dropped from the battery due to high scores and low time allocations.

5R3

Scale Reactivity

A to B

UPPER	-0.37* (9)	0.60 (10)	0.57 (7)
MIDDLE	0.17 (41)	1.34 (4)	
LOWER	1.82 (26)	4.00 (2)	
	0-10	11-60	over 60
	Minutes		
	in Vowels with "r"		

B to C

UPPER	0.15 (13)	-0.12 (11)
MIDDLE	0.66 (30)	0.89 (12)
LOWER	1.17 (14)	
	0-10	over 10
	Minutes	
	in Vowels with "r"	

*Mean Change
(n)

Grade 5 Reading

5R05

Scale Name:

Context Clues - Meaning

Description:

The student must understand the meaning of a sentence or paragraph and use the semantic context to select the best word to complete a sentence.

Example:

To hold back the crowd, _____
had been placed around the playing field.

A. seats

B. trees

☒ C. ropesNumber of Items: 12Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	7.19	8.14	8.43
SAMPLE	Standard Deviation	3.86	3.55	3.69
	Mean Proportion Correct	.60	.68	.70
	Coefficient Alpha	.75	.73	.78
	Standard Error of Measurement	1.85	1.75	1.64
UPPER	Mean	10.46	10.62	10.94
STRATA	Standard Deviation	1.79	1.47	0.94
	Proportion near Ceiling	.77	.81	.92
MIDDLE	Mean	8.05	8.88	9.63
STRATA	Standard Deviation	1.97	2.14	2.03
	Proportion near Ceiling	.20	.37	.58
LOWER	Mean	4.14	5.64	6.07
STRATA	Standard Deviation	3.27	3.47	3.78
	Proportion near Ceiling	.00	.14	.27

Revisions:

This scale was dropped from the ABCD test battery but was used in the selection test. Scores for the middle strata were high and there was a mixed pattern of reactivity.

SRS
Scale Reactivity

A to B

UPPER	3.33 * (3)	0.00 (5)		-0.47 (16)
MIDDLE	0.90 (5)	1.50 (25)	-0.50 (3)	0.63 (12)
LOWER	0.25 (2)	4.00 (8)	0.39 (9)	0.63 (8)
	0-10	11-60	61-120	121-240
	Minutes in Context Clues			

B to C

UPPER	0.19 (8)		1.17 (9)	0.00 (6)
MIDDLE	0.65 (13)	0.00 (10)	1.05 (10)	2.10 (5)
LOWER			0.44 (8)	0.58 (6)
	0-30	31-90	91-180	over 180
	Minutes in Context Clues			

*Mean Change
(n)

Grade 5 Reading

5R06

Scale Name:

Context Clues - Form of Word

Description:

The student must use his understanding of context and his knowledge of prefixes and suffixes to select the correct form of a word to complete a sentence.

Example:

At the movies we saw a _____
of a coming attraction.

☒ A. preview
B. review
C. interview
D. viewer

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	5.55	6.39	6.93
	Standard Deviation	3.45	3.08	2.72
	Mean Proportion Correct	.56	.64	.69
	Coefficient Alpha	.77	.74	.70
	Standard Error of Measurement	1.57	1.49	1.41
UPPER STRATA	Mean	8.16	8.87	8.50
	Standard Deviation	1.48	0.98	1.06
	Proportion near Ceiling	.58	.81	.79
MIDDLE STRATA	Mean	6.73	6.90	7.68
	Standard Deviation	2.09	1.92	1.76
	Proportion near Ceiling	.28	.29	.43
LOWER STRATA	Mean	3.30	4.08	5.47
	Standard Deviation	2.64	2.77	2.35
	Proportion near Ceiling	.03	.04	.13

Revisions:

Items from this scale were combined with items from 5R16 to form a scale in root words and affixes. Because this decision was based on the data from B to C, no item reactivity data were available; but item gains over the year were studied to guide selection. Items 1, 2, 4, 5, and 9 were retained. One new and more difficult item was written.

SR6
Scale Reactivity

A to B

UPPER	1.00 * (7)	0.67 (10)		0.38 (7)
MIDDLE	1.06 (17)	0.58 (16)	-0.53 (5)	0.24 (7)
LOWER	-0.60 (5)	1.24 (11)	0.33 (5)	0.94 (6)
	0-10	11-60	61-120	over 120
	Minutes			
	in Root Words and Affixes			

B to C

UPPER		-0.59 (9)	-0.27 (10)	-0.33 (4)
MIDDLE	0.00 (4)	0.40 (10)	0.60 (14)	0.93 (10)
LOWER	2.07 (5)	1.86 (5)	2.13 (5)	
	31-90	91-180	181-275	over 275
	Minutes			
	in Root Words and Affixes			

* Mean Change
(n)

Item Reactivity (Total Sample)

Item #	Proportion Correct		
	at A	at B	at C
1	.55	.55	.65
2	.63	.74	.82
3	.71	.83	.85
4	.64	.74	.79
5	.73	.76	.80
6	.76	.85	.89
7	.79	.87	.91
8	.85	.88	.95
9	.46	.56	.58
10	.51	.50	.43

Grade 5 Reading 5R07

Scale Name: Context Clues - Pronouns

Description: The student must use his understanding of context and his knowledge of pronoun reference to select the correct pronoun to complete a sentence. Includes both personal pronouns and relative pronouns.

Example:

When he had collected all the papers, John
put _____ on the table.

A. he
B. it
☒ C. them
D. its

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	6.34	7.07	7.46
	Standard Deviation	3.38	3.29	2.93
	Mean Proportion Correct	.63	.71	.75
	Coefficient Alpha	.80	.81	.77
	Standard Error of Measurement	1.45	1.35	1.32
UPPER STRATA	Mean	9.16	9.23	9.39
	Standard Deviation	0.95	0.67	0.96
	Proportion near Ceiling	.89	1.00	.88
MIDDLE STRATA	Mean	7.32	8.22	8.47
	Standard Deviation	2.17	2.27	1.43
	Proportion near Ceiling	.44	.73	.63
LOWER STRATA	Mean	4.56	4.73	5.02
	Standard Deviation	2.57	2.81	2.69
	Proportion near Ceiling	.10	.11	.07

Revisions:

Items from this scale were combined with items from 5R19 to form a pronouns scale. Items 1, 2, 5, 7, 8, and 10 were retained. Two new items were written following the pattern of reactive items.

Scale Reactivity

A to B

UPPER	0.10 * (7)	0.12 (11)	0.00 (7)
MIDDLE	1.35 (34)	1.15 (11)	
LOWER	0.02 (27)		

0-10

11-60

60-120

Minutes

in Pronoun Reference

B to C

UPPER	0.57 (7)	0.17 (15)	
MIDDLE		0.23 (32)	0.67 (6)
LOWER	1.00 (4)	-0.77 (7)	3.34 (4)

0-10

11-60

over 120

Minutes

in Pronoun Reference

* Mean Change
(n)Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.79	.11	+	
2	.83	.16	+	
3	.81	.04	F	
4	.90	.09	-	
5	.83	.02	-	
6	.92	.02	F	
7	.83	.11	-	
8	.46	.22	F	
9	.83	.16	-	
10	.65	.16	+	

Grade 5 Reading

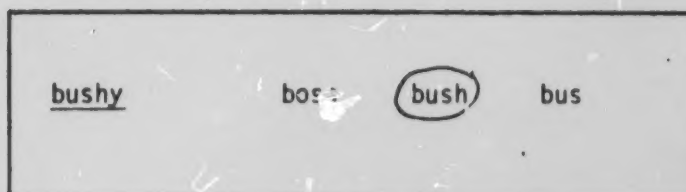
5R09

Scale Name:

Word Structure - Identification of Root Words

Description:

The student must identify the root word in a derived or inflected form.

Example:Number of Items: 14Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	11.76	12.17	12.29
	Standard Deviation	3.25	3.29	2.96
	Mean Proportion Correct	.84	.87	.88
	Coefficient Alpha	.79	.84	.81
	Standard Error of Measurement	1.42	1.25	1.25
UPPER STRATA	Mean	13.54	13.71	13.81
	Standard Deviation	0.82	0.60	0.51
	Proportion near Ceiling	.96	1.00	1.00
MIDDLE STRATA	Mean	13.05	13.36	13.23
	Standard Deviation	1.52	0.97	0.95
	Proportion near Ceiling	.84	.92	.92
LOWER STRATA	Mean	9.97	11.00	11.53
	Standard Deviation	3.88	2.70	4.16
	Proportion near Ceiling	.38	.57	.60

Revisions:

Scores on this scale were very high. The scale was dropped.

5R9
Scale Reactivity

A to B

UPPER	0.00* (7)	0.30 (10)		0.00 (7)
MIDDLE	0.12 (17)	0.63 (16)	1.20 (5)	-0.21 (7)
LOWER	0.90 (5)	0.27 (11)	3.10 (5)	0.58 (6)
	0-10	11-60	61-120	over 120
	Minutes			
	in Root Words and Affixes			

B to C

UPPER		0.17 (9)	0.15 (10)	0.00 (4)
MIDDLE	-0.38 (4)	-0.15 (10)	0.11 (14)	0.05 (10)
LOWER	0.00 (5)	0.70 (5)	0.80 (5)	
	31-90	91-180	181-275	over 275
	Minutes			
	in Root Words and Affixes			

*Mean Change
 (n)

Grade 5 Reading

5R10

Scale Name:

Word Structure - Division of Word Parts

Description:

The student must indicate word structure by drawing lines to separate the root word, prefixes, and suffixes.

Example:

hope/less/ly
dis/lik/ing

Number of Items: 12Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	8.24	9.40	9.81
	Standard Deviation	3.56	2.86	2.46
	Mean Proportion Correct	.69	.78	.82
	Coefficient Alpha	.80	.75	.70
	Standard Error of Measurement	1.52	1.37	1.30
UPPER STRATA	Mean	9.96	10.98	10.83
	Standard Deviation	2.21	1.52	1.56
	Proportion near Ceiling	.65	.89	.79
MIDDLE STRATA	Mean	9.27	10.06	10.35
	Standard Deviation	2.35	1.64	1.88
	Proportion near Ceiling	.46	.55	.70
LOWER STRATA	Mean	6.99	8.19	9.04
	Standard Deviation	3.56	2.23	2.41
	Proportion near Ceiling	.17	.25	.33

Revisions:

Scores on this scale were also high. The scale was dropped. Prefixes and suffixes will be tested in the final battery through items testing meaning rather than recognition (see 5R06 and 5R16).

5R10
Scale Reactivity

A to B

UPPER	1.71* (7)	0.10 (10)		1.14 (7)
MIDDLE	0.74 (17)	1.23 (16)	0.53 (5)	0.95 (7)
LOWER	0.80 (5)	1.64 (11)	0.07 (5)	1.11 (6)
	0-10	11-60	61-120	over 60

Minutes
 in Root Words and Affixes

B to C

UPPER		0.63 (9)	-0.57 (10)	0.00 (4)
MIDDLE	1.92 (4)	0.43 (10)	-0.36 (14)	0.60 (10)
LOWER	-0.27 (5)	1.60 (5)	0.47 (5)	
	31-90	91-180	181-275	over 275

Minutes
 in Root Words and Affixes

*Mean Change
 (n)

Grade 5 Reading 5R11

Scale Name: Word Structure - First SyllableDescription: The student must identify the first syllable in a word.Example:

<u>student</u>	A. st	(B.) stu	C. stud
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Number of Items: 14Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	6.46	8.34	8.98
	Standard Deviation	5.41	4.87	4.82
	Mean Proportion Correct	.46	.60	.64
	Coefficient Alpha	.84	.83	.84
	Standard Error of Measurement	2.07	1.96	1.85
UPPER STRATA	Mean	11.46	12.39	12.31
	Standard Deviation	1.89	1.61	1.42
	Proportion near Ceiling	.58	.74	.58
MIDDLE STRATA	Mean	6.56	8.43	9.06
	Standard Deviation	4.77	4.47	4.15
	Proportion near Ceiling	.18	.25	.26
LOWER STRATA	Mean	4.78	5.31	7.73
	Standard Deviation	4.12	4.44	3.83
	Proportion near Ceiling	.00	.14	.13

Revisions:

This scale was one of the most reactive. Items from this scale were combined with items from 5R12 to form a syllables scale. Since these first syllable items appeared more reactive, more first syllables were included in the scale. Items 3 to 8, 12, and 13 were retained. Six new items were written, similar to the more reactive items.

Scale Reactivity

A to B

UPPER	0.91* (11)	1.23 (15)	
MIDDLE	1.05 (10)	2.70 (33)	5.50 (3)
LOWER	2.18 (11)	-1.36 (11)	0.50 (6)
	0-10	11-60	121-240
	Minutes in Syllables		

B to C

UPPER	0.75 (2)	-0.30 (15)	-0.43 (7)
MIDDLE	-0.81 (8)	0.61 (27)	2.29 (7)
LOWER	1.50 (6)	-0.33 (3)	5.58 (6)
	0-30	31-60	over 60
	Minutes in Syllables		

* Mean Change
(n)Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.93	.04	+	
2	.59	.13	-	
3	.63	.13	F	
4	.67	.11	+	
5	.63	.20	+	
6	.72	.18	+	
7	.33	.09	+	
8	.70	.13	+	
9	.85	.09	F	
10	.59	.18	+	
11	.93	.02	F	
12	.37	.11	+	
13	.67	.18	+	
14	.39	.20	F	

Grade 5 Reading 5R12

Scale Name: Word Structure - Last SyllableDescription: The student must identify the last syllable in a word.Example:

<u>principal</u> A. pal B. ipal C. al
--

Number of Items: 11Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	6.58	7.45	8.34
SAMPLE	Standard Deviation	3.84	3.48	2.91
	Mean Proportion Correct	.60	.68	.76
	Coefficient Alpha	.77	.75	.71
	Standard Error of Measurement	1.76	1.65	1.49
UPPER	Mean	9.21	9.50	9.81
STRATA	Standard Deviation	1.41	1.56	1.33
	Proportion near Ceiling	.62	.67	.79
MIDDLE	Mean	6.27	7.46	8.50
STRATA	Standard Deviation	3.87	2.87	2.24
	Proportion near Ceiling	.37	.43	.52
LOWER	Mean	5.72	5.41	7.47
STRATA	Standard Deviation	3.47	3.59	2.12
	Proportion near Ceiling	.14	.21	.27

Revisions:

Items 1, 6, 8, 9, and 11 were used in the syllables scale. Two new last syllable items were added.

Scale Reactivity

A to B

UPPER	-0.27* (11)	0.80 (15)	
MIDDLE	1.85 (10)	1.12 (33)	1.17 (3)
LOWER	0.14 (11)	-1.00 (11)	-0.67 (6)
	0-10	11-60	121-240
	Minutes in Syllables		

B to C

UPPER	0.75 (2)	-0.40 (15)	1.50 (7)
MIDDLE	0.00 (8)	1.83 (27)	1.21 (7)
LOWER	0.25 (6)	2.00 (3)	0.58 (6)
	0-30	31-60	over 60
	Minutes in Syllables		

* Mean Change
(n)Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.59	.02	+	
2	.80	.07	F	
3	.93	.04	-	
4	.70	.18	F	
5	.78	.07	-	
6	.78	.18	F	
7	.89	-.07	F	
8	.61	.07	+	
9	.41	.00	F	
10	.65	.16	-	
11	.70	.18	F	

Grade 5 Reading 5R13

Scale Name: Word Structure - Number of SyllablesDescription: The student must identify the number of syllables in a word.Example:

window	1	2	3	4	5
--------	---	---	---	---	---

Number of Items: 13Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	9.72	10.67	11.01
	Standard Deviation	3.39	2.79	2.62
	Mean Proportion Correct	.75	.82	.85
	Coefficient Alpha	.80	.76	.77
	Standard Error of Measurement	1.47	1.31	1.22
UPPER STRATA	Mean	12.63	12.69	12.79
	Standard Deviation	0.68	0.85	0.60
	Proportion near Ceiling	1.00	.96	1.00
MIDDLE STRATA	Mean	10.30	10.64	11.15
	Standard Deviation	2.36	2.51	1.99
	Proportion near Ceiling	.63	.66	.81
LOWER STRATA	Mean	8.60	10.16	10.25
	Standard Deviation	2.53	2.10	2.23
	Proportion near Ceiling	.34	.59	.60

Revisions:

Since the scales on identifying syllables (5R11 and 5R12) were at a more appropriate level of difficulty, this scale was dropped.

Scale Reactivity

A to B

UPPER	-0.09* (11)	0.17 (15)	
MIDDLE	0.45 (10)	0.19 (33)	0.92 (3)
LOWER	0.41 (11)	3.19 (11)	1.08 (6)
	0-10	11-60 Minutes in Syllables	121-240

B to C

UPPER	-1.25 (2)	0.00 (15)	0.82 (7)
MIDDLE	-0.19 (8)	0.37 (27)	0.86 (7)
LOWER	1.63 (6)	-1.92 (3)	0.33 (6)
	0-30	31-60 Minutes in Syllables	over 60

*Mean Change
(n)

Grade 5 Reading 5R15

Scale Name: Vocabulary - SynonymsDescription: The student must select the best synonym for a word.Example:

<u>foolish</u> show	
1.	clever
2.	exciting
3.	silly
4.	witty

Number of Items: 40Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	18.12	20.79	22.60
	Standard Deviation	10.99	10.64	11.73
	Mean Proportion Correct	.45	.52	.57
	Coefficient Alpha	.90	.90	.92
	Standard Error of Measurement	3.45	3.30	3.17
UPPER STRATA	Mean	28.94	30.38	33.11
	Standard Deviation	4.29	5.34	3.47
	Proportion near Ceiling	.27	.52	.75
MIDDLE STRATA	Mean	19.95	21.23	23.73
	Standard Deviation	6.07	7.43	7.18
	Proportion near Ceiling	.00	.08	.12
LOWER STRATA	Mean	8.81	12.00	12.09
	Standard Deviation	4.25	6.44	5.56
	Proportion near Ceiling	.00	.00	.00

Revisions:

This scale will be used in the final battery. The 15 most reactive items were retained and the other items were dropped. Items 5, 10, 13, 14, 15, 21, 24, 26, 28, 29, 31, 32, 33, 37, and 40 were retained.

A to B

UPPER

1.56*
(6)

1.20
(20)

MIDDLE

1.47
(29)

3.25
(17)

LOWER

4.24
(19)

2.86
(9)

0-10

over 10

Minutes

in Synonyms

B to C

UPPER

1.92
(4)

2.50
(2)

3.28
(18)

MIDDLE

2.79
(5)

2.31
(15)

2.85
(22)

LOWER

2.00
(6)

2.05
(8)

0-10

11-30

over 30

Minutes

in Synonyms

* Mean Change
(n)

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.93	.04	-	
2	1.00	.00	F	
3	.98	-.02	F	
4	.96	.04	+	
5	.67	.00	+	
6	.76	.13	+	
7	.83	.02	F	
8	.96	.02	+	
9	.93	-.07	-	
10	.78	.13	+	

5R15
continued:

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
11	.89	.07	-	
12	.80	.07	-	
13	.76	.20	+	
14	.52	.16	+	
15	.72	.13	+	
16	.67	-.11	+	
17	.61	.02	F	
18	.74	.04	-	
19	.59	.04	-	
20	.48	-.02	+	
21	.59	.16	+	
22	.80	.00	F	
23	.37	.07	-	
24	.54	.13	+	
25	.59	-.11	+	
26	.52	.00	+	
27	.63	-.02	-	
28	.57	.16	+	
29	.33	.22	F	
30	.37	.00	-	
31	.48	.04	+	
32	.43	.00	+	
33	.39	.11	+	
34	.50	.07	-	
35	.50	.00	+	
36	.46	.07	-	
37	.43	.22	-	
38	.37	.04	-	
39	.26	-.07	+	
40	.13	-.02	+	

Grade 5 Reading

SR16

Scale Name:

Word Meaning - Prefix and Suffix Meaning

Description:

The student must identify the meaning of common prefixes and suffixes or of a word containing a prefix or suffix.

Example:

<u>undependable</u>	
☒ A.	not able to be trusted
☐ B.	not able to trust others
☐ C.	someone who trusts others
☐ D.	the state of independence
<u>recount</u>	
☐ A.	someone who
☐ B.	the act of
☐ C.	without
☒ D.	over again

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	4.05	4.86	5.17
	Standard Deviation	3.29	3.19	3.24
	Mean Proportion Correct	.41	.48	.52
	Coefficient Alpha	.69	.69	.72
	Standard Error of Measurement	1.74	1.68	1.64
UPPER STRATA	Mean	6.77	7.01	8.11
	Standard Deviation	1.47	2.37	1.04
	Proportion near Ceiling	.23	.37	.50
MIDDLE STRATA	Mean	5.03	5.35	5.54
	Standard Deviation	2.46	2.57	2.58
	Proportion near Ceiling	.12	.18	.22
LOWER STRATA	Mean	1.44	2.62	2.89
	Standard Deviation	2.13	2.40	2.06
	Proportion near Ceiling	.00	.00	.00

Revisions:

Items of the second type shown above seemed more confusing, so all items in the III-B battery will be of the first type. Items 1, 3, and 4 were retained. Items 6, and 9 were rewritten in the whole word format. Four new items were written.

Scale Reactivity

A to B

UPPER	0.66* (8)	0.33 (10)		0.38 (7)
MIDDLE	0.68 (18)	1.06 (17)	-2.33 (4)	0.19 (4)
LOWER	-1.07 (5)	2.12 (11)	3.17 (6)	0.22 (6)
	0-10	11-60	61-120	over 120
	Minutes			
	in Root Words and Affixes			

B to C

UPPER		1.13 (10)	0.80 (10)	2.00 (4)
MIDDLE	3.00 (4)	-0.13 (10)	-0.17 (16)	0.97 (12)
LOWER	-0.26 (5)	1.34 (5)	1.87 (5)	
	31-90	91-180	181-275	over 275
	Minutes			
	in Root Words and Affixes			

* Mean Change
(n)Item Reactivity (Lower Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.21	.00	-	
2	.68	.04	+	
3	.43	.00	-	
4	.43	.11	+	
5	.18	.32	+	
6	.32	.14	+	
7	.21	.00	F	
8	.32	.04	-	
9	.29	.18	F	
10	.39	.21	+	

Grade 5 Reading

5R17

Scale Name:

Word Meaning - Multimeaning Words

Description:

The student must understand the specific meaning of a word as used in the context of a sentence.

Example:Jane has a ring on her finger.

- ☒ A. something to wear
- ☐ B. the sound of a bell
- ☐ C. a circle of people
- ☐ D. the place for a boxing match

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	4.18	4.78	5.36
	Standard Deviation	3.58	3.58	3.72
	Mean Proportion Correct	.42	.48	.54
	Coefficient Alpha	.76	.77	.81
	Standard Error of Measurement	1.66	1.62	1.54
UPPER STRATA	Mean	7.71	7.73	8.56
	Standard Deviation	1.53	1.61	1.76
	Proportion near Ceiling	.46	.56	.71
MIDDLE STRATA	Mean	4.33	5.09	6.15
	Standard Deviation	2.95	3.06	3.18
	Proportion near Ceiling	.12	.18	.36
LOWER STRATA	Mean	0.90	2.52	2.53
	Standard Deviation	.82	2.79	2.56
	Proportion near Ceiling	.00	.00	.00

Revisions:

Items from scales 5R17, 5R18, and 5R20 were combined to form a 20-item scale on word meaning in context. Seven items from this scale were included. Items 1, 3, and 10 were dropped.

A to B

UPPER	0.00* (5)	-1.34 (2)	0.12 (19)
MIDDLE	1.06 (17)	0.28 (12)	1.12 (16)
LOWER	2.42 (11)	1.82 (11)	0.50 (6)
	11-120	121-240	over 240
	Minutes in Word Meaning		

B to C

UPPER	-0.15 (9)		1.24 (14)
MIDDLE	1.91 (7)	0.86 (7)	0.72 (28)
LOWER	-0.44 (9)	2.40 (5)	
	0-500	501-800	801-1600
	Minutes in Word Meaning		

* Mean Change
(n)

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.93	.04	F	
2	.39	.13	F	
3	.78	.04	F	
4	.72	-.04	-	
5	.48	.18	-	
6	.46	.02	+	
7	.59	.13	+	
8	.41	.11	F	
9	.50	.13	F	
10	.48	-.13	F	

Grade 5 Reading 5R18

Scale Name: Word Meaning - Unfamiliar Words in ContextDescription: The student must use the context of a sentence to select the best definition for an unfamiliar word. Some items use nonsense words.Example:

Rain fell for several days. When it finally stopped, the ground was completely saturated.

- A. sandy
- B. dried
- ☒ C. soaked
- D. slippery

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	4.95	6.22	6.46
	Standard Deviation	3.91	3.57	3.80
	Mean Proportion Correct	.50	.62	.65
	Coefficient Alpha	.82	.82	.85
	Standard Error of Measurement	1.57	1.42	1.37
UPPER STRATA	Mean	8.99	8.99	9.46
	Standard Deviation	1.07	1.11	0.77
	Proportion near Ceiling	.85	.81	.96
MIDDLE STRATA	Mean	5.59	6.62	7.31
	Standard Deviation	2.81	2.51	3.03
	Proportion near Ceiling	.18	.35	.62
LOWER STRATA	Mean	1.13	3.36	3.51
	Standard Deviation	2.18	3.10	2.36
	Proportion near Ceiling	.00	.07	.07

Revisions:

Seven items from this scale were included in the III-B scale on word meaning in context. Items 3, 5, and 9 were dropped.

5R18
Scale Reactivity

A to B

UPPER	-0.36* (5)	0.50 (2)	-0.04 (19)
MIDDLE	1.16 (17)	0.25 (12)	1.42 (16)
LOWER	2.70 (11)	2.43 (11)	1.17 (6)

11-120

121-240

over 240

Minutes

in Word Meaning

B to C

UPPER	0.70 (9)		0.26 (14)
MIDDLE	-0.05 (7)	1.14 (7)	0.87 (28)
LOWER	-0.74 (9)	0.73 (5)	

0-500

501-800

801-1600

Minutes

in Word Meaning

* Mean Change
(n)

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.65	.18	-	
2	.63	.09	F	
3	.70	.00	-	
4	.74	.07	F	
5	.87	.02	F	
6	.39	.04	+	
7	.78	.13	+	
8	.67	.07	+	
9	.65	.04	-	
10	.65	.07	+	

Grade 5 Reading 5R19

Scale Name: Word Meaning - Pronoun ReferenceDescription: The student must identify the referent of a pronoun as used in the context of a paragraph.Example:

Susan bought her friend Mary a birthday present. She wrapped it in bright paper.

She means

- A. Mary
- ☒ B. Susan
- C. the friend
- D. the present

Number of Items: 9Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	3.21	4.64	4.89
	Standard Deviation	3.42	3.40	3.69
	Mean Proportion Correct	.36	.52	.54
	Coefficient Alpha	.77	.79	.85
	Standard Error of Measurement	1.54	1.46	1.34
UPPER STRATA	Mean	6.19	7.48	8.02
	Standard Deviation	2.21	1.13	1.39
	Proportion near Ceiling	.42	.70	.83
MIDDLE STRATA	Mean	3.43	5.02	5.64
	Standard Deviation	2.66	2.48	2.70
	Proportion near Ceiling	.08	.22	.33
LOWER STRATA	Mean	0.07	1.37	1.44
	Standard Deviation	1.74	2.61	2.70
	Proportion near Ceiling	.00	.04	.07

Revisions:

Items from this scale were combined with items from 5R07 to form a pronouns scale. Item 6 was dropped. Item 1 was revised. The other 7 items were retained as is.

Scale Reactivity

A to B

UPPER	0.38 * (7)	1.48 (11)	1.63 (8)
MIDDLE	1.81 (35)	1.69 (11)	
LOWER	1.30 (28)		
	0-10	11-60	61-120
	Minutes		
	in Pronoun Reference		

B to C

UPPER	0.71 (8)	0.42 (15)	
MIDDLE		0.85 (36)	0.89 (6)
LOWER	0.25 (4)	0.14 (7)	1.67 (4)
	0-10	11-60	over 120
	Minutes		
	in Pronoun Reference		

* Mean Change
(n)Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.65	.18	-	
2	.61	.22	F	
3	.72	-.02	F	
4	.61	.11	+	
5	.20	.22	F	
6	.61	.13	-	
7	.57	.22	F	
8	.50	.29	+	
9	.30	.02	+	

Grade 5 Reading

5R20

Scale Name:

Word Meaning - Figurative Language

Description:

The student must understand the meaning of a phrase used in a non-literal sense. Includes idiomatic expressions and similes.

Example:

As John stepped outside, he felt the cold air like an icy hand.

- A. The cold air closed in around John.
- B. A cold hand grabbed John.
- C. John's hands got cold.
- D. John touched the cold air with his hand.

Number of Items: 8Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	3.38	4.16	4.75
	Standard Deviation	3.34	3.16	3.36
	Mean Proportion Correct	.42	.52	.59
	Coefficient Alpha	.81	.79	.85
	Standard Error of Measurement	1.36	1.34	1.22
UPPER STRATA	Mean	6.51	6.56	7.72
	Standard Deviation	1.38	1.32	0.55
	Proportion near Ceiling	.65	.70	1.00
MIDDLE STRATA	Mean	3.89	4.46	5.47
	Standard Deviation	2.84	2.76	2.25
	Proportion near Ceiling	.31	.41	.57
LOWER STRATA	Mean	0.76	2.01	1.71
	Standard Deviation	2.32	2.41	2.41
	Proportion near Ceiling	.03	.04	.07

Revisions:

Six items from this scale were included in the III-B scale on word meaning in context. Items 1 and 6 were dropped.

5R20
Scale Reactivity

A to B

UPPER	0.00* (5)	0.67 (2)	-0.02 (19)
MIDDLE	0.57 (17)	1.36 (12)	0.75 (16)
LOWER	0.97 (11)	2.18 (11)	1.17 (6)
	11-120	121-240	over 240
	Minutes in Word Meaning		

B to C

UPPER	1.33 (9)		1.00 (14)
MIDDLE	1.85 (7)	2.53 (7)	0.70 (28)
LOWER	-1.44 (9)	1.86 (5)	
	0-500	501-800	801-1600
	Minutes in Word Meaning		

* Mean Change
(n)

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.87	.11	F	
2	.50	.18	F	
3	.67	.07	F	
4	.50	.11	F	
5	.54	.16	F	
6	.50	.00	-	
7	.83	.04	F	
8	.48	.07	+	

Grade 5 Reading

5R22

Scale Name:

Comprehension - Literal Recall

Description:

The student must demonstrate his understanding of a prose passage by recalling information literally stated in the passage.

Example:

...John went to the store to buy bread....

Where did John go?

- ☒ A. to the store
- ☐ B. to school
- ☐ C. to the park
- ☐ D. to the movies

Number of Items: 8Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	3.90	4.38	4.73
	Standard Deviation	2.63	2.39	2.49
	Mean Proportion Correct	.49	.55	.59
	Coefficient Alpha	.67	.63	.70
	Standard Error of Measurement	1.41	1.36	1.28
UPPER STRATA	Mean	6.00	5.78	6.09
	Standard Deviation	1.33	1.23	0.96
	Proportion near Ceiling	.54	.38	.63
MIDDLE STRATA	Mean	4.43	4.80	5.51
	Standard Deviation	1.89	1.99	1.45
	Proportion near Ceiling	.20	.27	.40
LOWER STRATA	Mean	1.73	2.86	3.35
	Standard Deviation	1.66	2.03	1.76
	Proportion near Ceiling	.03	.04	.00

Revisions:

This scale and scale 5R23, translation, were combined to form a 14-item scale in direct, non-inferential comprehension. The two subcategories will be kept separate in the teacher logs. Items 1, 3, 4, 7 and 8 from literal recall were retained in the combined scale. Some new items were added.

Note: For all the comprehension scales, individual testing provided input to item selection and revision. See Technical Note III-4 for details.

5R22
Scale Reactivity

A-149

A to B

UPPER	-0.30 * (13)	-0.34 (8)	-0.04 (4)
MIDDLE	-0.21 (21)	1.04 (13)	0.97 (11)
LOWER	0.78 (17)	1.67 (7)	3.29 (2)
	0-60	61-120	121-240
	Minutes in Literal Recall		

B to C

UPPER	0.18 (15)	0.47 (3)	0.53 (5)
MIDDLE	1.28 (6)	-0.03 (9)	0.33 (23)
LOWER	0.63 (4)	-0.04 (10)	
	0-180	181-275	over 275
	Minutes in Literal Recall		

* Mean Change
(n)

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.57	.20	+	
2	.68	.00	+	
3	.94	.02	+	
4	.64	.02	+	
5	.32	-.11	F	
6	.85	.07	-	
7	.70	.07	-	
8	.53	.00	+	

Grade 5 Reading

5R23

Scale Name:

Comprehension - Translation

Description:

The student must recognize ideas stated in different words (paraphrase), and recall information when ideas are restated.

Example:

...John stopped at the corner grocery to buy bread....

Where did John go?

- ☒ A. to the store
- ☐ B. to school
- ☐ C. to the park,
- ☐ D. to the movies

Number of Items: 8Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	3.49	4.29	4.45
	Standard Deviation	2.57	2.72	2.66
	Mean Proportion Correct	.44	.54	.56
	Coefficient Alpha	.61	.69	.68
	Standard Error of Measurement	1.50	1.41	1.40
UPPER STRATA	Mean	5.68	6.63	6.60
	Standard Deviation	1.62	1.41	1.14
	Proportion near Ceiling	.38	.65	.67
MIDDLE STRATA	Mean	3.70	4.71	4.81
	Standard Deviation	1.89	2.12	2.12
	Proportion near Ceiling	.10	.31	.25
LOWER STRATA	Mean	1.66	2.58	2.87
	Standard Deviation	2.06	1.91	1.81
	Proportion near Ceiling	.00	.04	.00

Revisions:

Items 4, 6 and 8 were retained to combine with items from 5R22, to form the literal comprehension scale. Item 7 was replaced with a very similar item. Some new items were added.

A to B

UPPER	1.92* (2)		0.76 (22)
MIDDLE	0.30 (8)	0.78 (17)	1.39 (20)
LOWER	0.82 (8)	0.62 (11)	0.88 (7)
	0-10	11-60	61-240
	Minutes in Translation		

B to C

UPPER		-0.53 (5)	0.05 (18)
MIDDLE	0.86 (12)	-0.72 (18)	0.33 (8)
LOWER	1.27 (4)	0.42 (6)	-0.99 (5)
	0-30	61-90	91-500
	Minutes in Translation		

* Mean Change
(n)

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.85	-.02	+	
2	.66	.11	+	
3	.85	.02	+	
4	.55	.09	-	
5	.47	.27	+	
6	.55	-.02	-	
7	.43	.11	+	
8	.38	.16	+	

Grade 5 Reading

5R24

Scale Name: Comprehension - SynthesisDescription: The student must synthesize information from different sentences in the text. Includes inference, when based closely on information given in the text.Example:

...John hopped on his bike. At the store, he bought some bread....

Where did John go?

- ☒ A. to the store
- ☐ B. to school
- ☐ C. to the park
- ☐ D. to the movies

Number of Items: 11Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	4.48	5.45	6.05
	Standard Deviation	3.64	3.29	3.22
	Mean Proportion Correct	.41	.50	.55
	Coefficient Alpha	.73	.67	.68
	Standard Error of Measurement	1.80	1.81	1.75
UPPER STRATA	Mean	7.78	8.19	9.17
	Standard Deviation	1.99	1.61	1.23
	Proportion near Ceiling	.35	.23	.58
MIDDLE STRATA	Mean	5.02	5.62	6.44
	Standard Deviation	2.27	2.47	1.84
	Proportion near Ceiling	.02	.06	.05
LOWER STRATA	Mean	1.02	2.86	3.17
	Standard Deviation	1.84	2.42	2.34
	Proportion near Ceiling	.00	.04	.00

Revisions:

This scale and scale 5R25, extrapolation, were combined to form a 9-item scale in inferential comprehension. Items 8 and 11 were retained. Items 2 and 10 were kept with revisions. In addition to A-B reactivity data, B-C gain scores were studied for item selection.

A to B

UPPER		0.02* (9)	0.67 (8)	0.81 (8)
MIDDLE	0.53 (9)	0.68 (30)	-1.02 (4)	3.33 (2)
LOWER	2.88 (10)	1.15 (15)		
	0-10	11-60	61-120	121-240
	Minutes in Synthesis			

B to C

UPPER	0.32 (4)	1.33 (19)
MIDDLE	0.30 (18)	1.40 (20)
LOWER	1.19 (9)	-0.85 (6)
	0-90	91-275
	Minutes in Synthesis	

* Mean Change
(n)

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.87	.02	+	
2	.83	.11	-	
3	.32	.11	-	
4	.49	-.11	+	
5	.60	.02	F	
6	.81	-.11	F	
7	.70	.09	F	
8	.57	.14	+	
9	.38	.11	+	
10	.51	-.09	F	
11	.43	.16	-	

Grade 5 Reading

5R25

Scale Name:

Comprehension - Extrapolation

Description:

The student must go beyond the information in the text and rely on his own knowledge or experience to supply additional information. Includes predicting additional events or applying a generalization.

Example:

...Mother gave John some money. John bought some bread for dinner....

Where did John go?

- (A) to the store
- B. to school
- C. to the park
- D. to the movies

Number of Items: 9Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	1.90	2.34	3.11
	Standard Deviation	2.53	2.41	2.54
	Mean Proportion Correct	.21	.26	.35
	Coefficient Alpha	.54	.48	.54
	Standard Error of Measurement	1.63	1.64	1.62
UPPER STRATA	Mean	3.36	4.01	5.15
	Standard Deviation	1.60	1.73	1.51
	Proportion near Ceiling	.00	.04	.13
MIDDLE STRATA	Mean	2.19	2.18	3.25
	Standard Deviation	2.33	2.14	2.11
	Proportion near Ceiling	.00	.02	.05
LOWER STRATA	Mean	0.47	1.60	2.21
	Standard Deviation	1.49	1.62	2.54
	Proportion near Ceiling	.00	.00	.00

Revisions:

Three items from this scale were retained for the inferential comprehension scale--items 2, 5 and 7.

5R25
Scale Reactivity

A to B

UPPER		0.20* (5)	0.12 (12)	0.95 (7)
MIDDLE	-0.05 (15)	0.30 (17)	-0.24 (12)	
LOWER	1.02 (14)	1.13 (10)	1.33 (2)	
	0-10	11-60	61-120	121-240
	Minutes in Extrapolation			

B to C

UPPER		0.63 (2)	1.76 (10)	0.92 (10)
MIDDLE	0.86 (9)	1.25 (17)	0.38 (12)	
LOWER	0.86 (12)	-2.13 (2)		
	0-30	31-90	91-180	181-500
	Minutes in Extrapolation			

* Mean Change
(n)

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.26	-.16		F
2	.55	-.05		F
3	.57	-.16		-
4	.72	.07		-
5	.40	.20		F
6	.36	-.07		-
7	.36	.05		+
8	.36	.09		+
9	.15	.07		F

Grade 5 Reading 5R26

Scale Name: Comprehension - EventsDescription: The student must understand elements of the action presented in a passage. Includes questions about who, what, or how.Example:

...John went to the store and bought some bread....

What did John buy?

- A. candy
- ☒ B. bread
- C. some milk
- D. a magazine

Number of Items: 8Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	3.08	3.82	4.12
	Standard Deviation	2.64	2.54	2.58
	Mean Proportion Correct	.39	.48	.52
	Coefficient Alpha	.64	.63	.67
	Standard Error of Measurement	1.47	1.44	1.39
UPPER STRATA	Mean	5.49	5.78	6.24
	Standard Deviation	1.43	1.23	1.46
	Proportion near Ceiling	.27	.42	.46
MIDDLE STRATA	Mean	3.45	4.16	4.72
	Standard Deviation	1.80	1.84	1.68
	Proportion near Ceiling	.06	.14	.20
LOWER STRATA	Mean	0.92	2.29	2.45
	Standard Deviation	1.92	1.80	1.65
	Proportion near Ceiling	.00	.04	.00

Revisions:

As in grade 2, the comprehension items were written according to a two-dimensional matrix, with scales 5R22-25 forming the process dimension and scales 5R26-29 forming the content dimension. Scales in the III-B battery will be identified primarily according to the process dimension and item reactivity has been reported for those scales. Within the III-B process scales, different types of content questions will be represented. Some event items are included.

5R26
Scale Reactivity

A to B

UPPER		0.64* (14)	-0.23 (11)
MIDDLE	-1.33 (3)	0.66 (34)	1.30 (8)
LOWER	1.05 (5)	1.71 (20)	
	0-10	11-60	61-240
	Minutes in Events		

B to C

UPPER	0.50 (10)	1.07 (6)	0.24 (6)	
MIDDLE	-0.65 (4)	0.05 (5)	0.56 (21)	0.66 (8)
LOWER	-0.15 (6)		0.45 (3)	-1.26 (5)
	0-90	91-180	181-275	over 275
	Minutes in Events			

*Mean Change
(n)

Grade 5 Reading 5R27

Scale Name: Comprehension - DescriptionDescription: The student must understand descriptions of characters and emotions or descriptions of settings (including time and place).Example:

Where does most of the action in this story take place?

- ☒ A. in a large city C. in a small town
 B. on a farm D. in an old house

How did Alicia feel when her brother arrived home?

- A. angry ☒ C. relieved
 B. frightened D. cheerful

Number of Items: 9Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	3.50	4.27	4.41
	Standard Deviation	2.62	2.59	2.54
	Mean Proportion Correct	.39	.47	.49
	Coefficient Alpha	.57	.58	.58
	Standard Error of Measurement	1.61	1.57	1.56
UPPER STRATA	Mean	5.42	5.72	6.29
	Standard Deviation	1.81	1.89	1.43
	Proportion near Ceiling	.15	.23	.29
MIDDLE STRATA	Mean	3.61	4.39	4.55
	Standard Deviation	1.82	2.34	1.98
	Proportion near Ceiling	.02	.16	.13
LOWER STRATA	Mean	1.67	2.80	2.80
	Standard Deviation	1.98	1.82	1.72
	Proportion near Ceiling	.00	.00	.00

Revisions:

Comprehension scales in the III-B battery will be identified primarily according to the process dimension (see notes under 5R26). Some description items will be included within the process scales.

5R27
Scale Reactivity

A to B

UPPER	-0.28* (15)	1.38 (2)	1.00 (8)
MIDDLE	0.78 (22)	0.77 (20)	-0.02 (3)
LOWER	1.07 (8)	0.57 (16)	3.38 (2)
	0-10	11-60	61-240
	Minutes in Description		

B to C

UPPER	0.67 (10)	0.50 (12)	
MIDDLE	-0.81 (14)	0.27 (18)	1.30 (6)
LOWER	-0.91 (7)	-0.66 (2)	1.62 (4)
	0-30	91-180	181-500
	Minutes in Description		

*Mean Change
 (n)

Grade 5 Reading 5R28

Scale Name: Comprehension - RelationshipsDescription: The student must understand the relationships between events. Includes logical relationships (cause and effect) and temporal relationships (event sequences).Example:

Why did Joe have to "keep moving, moving...."?

- A. to reach a nearby town
- B. so that he would dry out
- ☒ C. so that he would not freeze
- D. to find a way across the river

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	3.75	4.57	5.47
	Standard Deviation	3.40	3.24	3.30
	Mean Proportion Correct	.38	.46	.55
	Coefficient Alpha	.73	.72	.75
	Standard Error of Measurement	1.68	1.63	1.57
UPPER STRATA	Mean	6.71	7.39	8.35
	Standard Deviation	1.73	1.33	1.19
	Proportion near Ceiling	.23	.31	.63
MIDDLE STRATA	Mean	4.27	4.53	6.08
	Standard Deviation	2.28	2.44	2.16
	Proportion near Ceiling	.06	.08	.18
LOWER STRATA	Mean	1.14	2.26	3.23
	Standard Deviation	1.74	2.57	3.05
	Proportion near Ceiling	.00	.00	.07

Revisions:

Comprehension scales in the III-B battery will be identified primarily according to the process dimension (see notes under 5R26). Some relationship items will be included within the process scales. In particular, relationship items, with their good gain from B to C, contribute to the inferential comprehension scale.

A to B

UPPER	0.22* (6)		0.81 (18)
MIDDLE	0.58 (27)	-1.03 (5)	0.09 (13)
LOWER	0.96 (24)		
	0-60	61-120	121-240
	Minutes in Relationships		

B to C

UPPER	0.65 (4)	0.77 (13)	2.17 (6)
MIDDLE	1.63 (9)	1.46 (19)	1.61 (10)
LOWER	0.27 (10)	1.57 (5)	
	0-90	91-180	181-275
	Minutes in Relationships		

*Mean Change
(n)

Grade 5 Reading 5R29

Scale Name: Comprehension - Main Idea

Description: The student must understand the central elements of a passage. Includes recognizing the topic or main characters and understanding a conclusion or generalization.

Example:

What is the passage mostly about?

- A. Janey's home
- B. a description of the willow plate
- C. Janey's friendship with Lupe
- ☒ D. the meaning of the willow plate

Number of Items: 9Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	3.44	3.88	4.35
	Standard Deviation	2.66	2.56	2.50
	Mean Proportion Correct	.38	.43	.48
	Coefficient Alpha	.59	.56	.56
	Standard Error of Measurement	1.60	1.60	1.56
UPPER STRATA	Mean	5.20	5.73	6.14
	Standard Deviation	1.50	1.70	1.03
	Proportion near Ceiling	.08	.23	.17
MIDDLE STRATA	Mean	4.03	4.23	4.67
	Standard Deviation	1.87	2.24	1.95
	Proportion near Ceiling	.02	.06	.05
LOWER STRATA	Mean	1.14	2.55	3.12
	Standard Deviation	1.80	2.05	2.38
	Proportion near Ceiling	.00	.04	.00

Revisions:

A 9-item main idea scale will be included in the final battery. Each comprehension passage will have at least one main idea question. This scale can be combined with the topic sentence scale (5R35) and related to time in main idea. Items in this scale can also be analyzed along the process dimension, since some passages state the main idea more directly than others. Main idea items from the pilot battery that were retained for the final battery can be located in the item data under the process scales. The retained main idea items are the following: scale 5R22--items 2 and 5 (item 5 was revised), scale 5R23--item 5, scale 5R24--items 1 and 9, scale 5R25--item 8 (revised).

5R29
Scale Reactivity

A to B

UPPER	1.34 * (2)	-0.58 (7)	0.60 (8)	0.64 (8)
MIDDLE	-0.43 (10)	0.92 (23)	0.65 (10)	-2.00 (2)
LOWER	1.29 (11)	1.52 (6)	1.51 (9)	
	0-60	61-120	121-240	over 240
	Minutes in Main Idea			

B to C

UPPER	0.02 (6)	0.04 (10)	1.13 (7)
MIDDLE	-0.16 (18)	-0.39 (6)	0.91 (14)
LOWER	0.52 (6)	0.00 (4)	1.53 (5)
	0-180	181-500	over 500
	Minutes in Main Idea		

*Mean Change
(n)

Grade 5 Reading 5R30

Scale Name: Comprehension - Evaluation of Fact and OpinionDescription: The student must evaluate a statement as to whether it is a fact or an opinion. In some items the student must evaluate the qualifications of a speaker.Example:

Which of these represents Janey's belief rather than a fact?

- A. The willow plate was old.
- B. Lupe had a brother and sister.
- ☒ C. The willow plate was perfect.
- D. Janey had another mother now.

Number of Items: 6Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	1.24	1.62	2.20
	Standard Deviation	2.04	2.19	2.29
	Mean Proportion Correct	.21	.27	.37
	Coefficient Alpha	.58	.64	.68
	Standard Error of Measurement	1.20	1.20	1.19
UPPER STRATA	Mean	3.14	3.49	4.17
	Standard Deviation	2.12	1.77	1.75
	Proportion near Ceiling	.46	.46	.67
MIDDLE STRATA	Mean	0.81	1.25	1.84
	Standard Deviation	1.37	1.65	2.06
	Proportion near Ceiling	.00	.00	.13
LOWER STRATA	Mean	0.32	-0.25	0.59
	Standard Deviation	1.08	1.34	1.23
	Proportion near Ceiling	.00	.00	.00

Revisions:

This scale has been expanded for use in the III-B battery. Item 4 was dropped; item 6 was revised by eliminating a confusing distractor. Five new items were written.

A to B

UPPER	0.70* (10)	1.22 (8)	-0.52 (7)
MIDDLE	0.00 (21)	1.15 (23)	
LOWER	-0.95 (16)	0.25 (10)	
	0-10	11-60	61-120
	Minutes in Evaluation		

B to C

UPPER		0.78 (8)	0.38 (7)	0.92 (7)
MIDDLE	-0.32 (4)	0.53 (13)	0.80 (21)	
LOWER	1.31 (6)	0.97 (8)		
	0-10	31-120	121-240	over 240
	Minutes in Evaluation			

* Mean Change
(n)

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.38	.14	+	
2	.26	.02	+	
3	.74	.00	+	
4	.23	.02	F	
5	.09	.05	+	
6	.23	.23	F	

Grade 5 Reading

5R33

Scale Name:

Study Skills - Reference Sources

Description:

The student must identify the reference source which would supply needed information.

Example:

You want to know the phone number
of a friend.

- A. dictionary
- B. encyclopedia
- C. card catalog
- ☒ D. telephone directory

Number of Items: 6Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	4.54	4.95	5.31
	Standard Deviation	1.78	1.62	1.27
	Mean Proportion Correct	.76	.83	.89
	Coefficient Alpha	.63	.65	.59
	Standard Error of Measurement	0.99	0.87	0.74
UPPER STRATA	Mean	5.49	5.64	5.89
	Standard Deviation	0.76	0.71	0.38
	Proportion near Ceiling	.96	.96	1.00
MIDDLE STRATA	Mean	5.39	5.48	5.78
	Standard Deviation	0.86	0.71	0.58
	Proportion near Ceiling	.92	.98	.97
LOWER STRATA	Mean	3.82	4.52	5.11
	Standard Deviation	1.74	1.97	1.65
	Proportion near Ceiling	.52	.68	.87

Revisions:

Scores on this scale were very high. The scale was dropped.

Grade 5 Reading 5R34

Scale Name: Study Skills - Reference Sources in BooksDescription: The student must identify the part of a book which would supply needed information.Example:

Which part of the book tells how many chapters are in the book?

- ☒ A. the Table of Contents
☐ B. the Glossary
☐ C. the Index

Number of Items: 6Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	2.97	3.23	3.54
	Standard Deviation	1.87	1.91	1.82
	Mean Proportion Correct	.50	.54	.59
	Coefficient Alpha	.29	.36	.36
	Standard Error of Measurement	1.44	1.39	1.33
UPPER STRATA	Mean	4.44	4.44	4.44
	Standard Deviation	1.37	1.31	1.21
	Proportion near Ceiling	.65	.81	.75
MIDDLE STRATA	Mean	3.04	3.69	3.35
	Standard Deviation	1.15	1.39	1.83
	Proportion near Ceiling	.24	.53	.38
LOWER STRATA	Mean	2.43	2.30	2.80
	Standard Deviation	1.90	1.38	1.49
	Proportion near Ceiling	.28	.14	.27

Revisions:

This scale was dropped from the final battery.

5R34
Scale Reactivity

A to B

UPPER	-1.50* (3)	0.17 (18)	0.00 (4)
MIDDLE	0.62 (29)	-0.50 (3)	0.81 (13)
LOWER	0.14 (21)	-1.88 (4)	1.50 (2)
	0-10	11-120	121-240

Minutes

in Reference Sources in Books

B to C

UPPER	-0.43 (7)	0.30 (10)		-0.30 (5)
MIDDLE	0.20 (10)	-0.40 (10)	-0.25 (6)	-0.75 (12)
LOWER		0.33 (9)	0.60 (5)	
	0-10	31-120	121-240	over 240

Minutes

in Reference Sources in Books

*Mean Change
(n)

Grade 5 Reading 5R35

Scale Name: Comprehension - Topic SentencesDescription: The student must identify the topic sentence in a group of sentences about one topic.Example:

Which sentence states the topic?

- A. The swift can fly 100 miles an hour.
- B. Blue jays fly 30 miles an hour, which is slow for a bird.
- ☒ C. Birds can fly at amazingly fast speeds.
- D. Ducks and hummingbirds fly 60 miles an hour.

Number of Items: 5Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	2.43	2.68	3.02
	Standard Deviation	2.43	2.37	2.22
	Mean Proportion Correct	.49	.54	.60
	Coefficient Alpha	.79	.81	.80
	Standard Error of Measurement	0.99	0.93	0.90
UPPER STRATA	Mean	4.04	4.41	4.83
	Standard Deviation	1.71	1.54	0.82
	Proportion near Ceiling	.81	.89	.96
MIDDLE STRATA	Mean	1.82	3.20	3.45
	Standard Deviation	2.23	2.10	1.74
	Proportion near Ceiling	.38	.67	.67
LOWER STRATA	Mean	0.25	0.59	1.00
	Standard Deviation	1.33	1.52	1.82
	Proportion near Ceiling	.04	.07	.13

Revisions:

This scale was expanded for the III-B battery. Five new items were written, some using the sentence sets from 5R36. Some of these new items should be more difficult than existing items and reduce problems with ceiling effects.

Scale Reactivity

A to B

UPPER	2.50 * (2)	0.50 (8)	0.19 (7)	0.59 (9)
MIDDLE	0.80 (10)	1.64 (24)	2.17 (8)	0.00 (2)
LOWER	0.24 (11)	0.20 (5)	0.48 (11)	
	0-60	61-120	121-240	over 240
	Minutes in Main Idea			

B to C

UPPER	0.45 (6)	0.13 (10)	0.17 (8)
MIDDLE	0.63 (19)	0.45 (6)	0.08 (17)
LOWER	1.11 (6)	0.34 (4)	-0.27 (5)
	0-180	181-500	over 500
	Minutes in Main Idea		

* Mean Change
(n)Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.44	.32	F	
2	.82	.02	F	
3	.51	.16	+	
4	.44	.27	+	
5	.40	.34	F	

Grade 5 Reading 5R36

Scale Name: Comprehension - Details Relevant to TopicDescription: The student must evaluate the relationship between a statement and the topic. He must decide which of 4 statements does not belong with the topic sentence.Example:

Toby Taylor had an unlucky day.

- A. Toby went to a party.
- B. Toby tore his new shirt.
- C. Toby got up late and missed breakfast.
- D. Toby forgot to bring his bat to baseball practice.

Number of Items: 5Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	2.77	3.50	3.79
	Standard Deviation	2.30	2.01	1.85
	Mean Proportion Correct	.55	.70	.76
	Coefficient Alpha	.69	.78	.77
	Standard Error of Measurement	0.94	0.83	0.79
UPPER STRATA	Mean	4.69	4.90	4.90
	Standard Deviation	0.57	0.36	0.33
	Proportion near Ceiling	1.00	1.00	1.00
MIDDLE STRATA	Mean	3.57	4.03	4.25
	Standard Deviation	1.97	1.45	1.05
	Proportion near Ceiling	.75	.81	.86
LOWER STRATA	Mean	0.73	2.20	2.53
	Standard Deviation	1.89	2.18	2.10
	Proportion near Ceiling	.14	.38	.47

Revisions:

Scores on this scale were generally higher than scores on the topic sentence scale. This scale was dropped. Some items were adapted for use in the topic sentence scale.

GRADE 5 MATHEMATICS

Sample Sizes:

	Test Occasion		
	A	B	C
TOTAL SAMPLE	131*	134	124
UPPER STRATA	36	36	34
MIDDLE STRATA	54	54	45

* All figures represent the total number of students tested. On any one subtest, missing data could reduce the number of students contributing.

Grade 5 Mathematics 5M01

Scale Name: Addition of Whole Numbers

Description: Tests the student's ability to add whole numbers.
 Items range from the addition of two 2-digit addends
 to column addition with up to six 2 or 3 digit addends.
 Nine items require regrouping.

Example:

$$\begin{array}{r} 2476 \\ + 325 \\ \hline \end{array}$$

A. 2701

C. 2801

B. 2791

D. 2799

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	7.02	7.13	7.78
	Standard Deviation	2.90	3.10	2.65
	Mean Proportion Correct	.70	.71	.78
	Coefficient Alpha	.75	.79	.73
	Standard Error of Measurement	1.39	1.35	1.29
UPPER STRATA	Mean	8.89	9.20	9.33
	Standard Deviation	1.33	0.96	1.23
	Proportion near Ceiling	.50	.85	.91
MIDDLE STRATA	Mean	7.27	7.84	7.97
	Standard Deviation	2.34	2.15	2.10
	Proportion near Ceiling	.48	.60	.57

Revisions:

Five items were retained and combined with five items from 5M02 to form a single ten item scale for addition and subtraction.

5M01
Scale Reactivity

	A to B			
UPPER	.05* (12)	-.03 (10)	1.03 (10)	
MIDDLE	.62 (15)	.33 (17)	.30 (9)	1.44 (3)
	10-59	60-119	120-240	over 240
	Minutes in Addition			

* Mean Change
 (n)

	B to C			
UPPER	.28 (6)	.25 (4)	.12 (11)	.91 (11)
MIDDLE	-.12 (8)	1.21 (11)	.46 (13)	.50 (8)
	0-9	10-59	60-119	over 120
	Minutes in Addition			

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.90	-.02	+	
2	.90	.08	-	
3	.96	-.10	F	
4	.82	.00	-	
5	.82	-.02	-	
6	.85	.04	+	
7	.77	.18	-	
8	.77	-.02	-	
9	.52	.12	+	
10	.54	.08	F	

Grade 5 Mathematics 5M02

Scale Name: Subtraction of Whole Numbers

Description: Tests the student's ability to subtract whole numbers. Items range from the subtraction of a 2-digit from a 2-digit number to the subtraction of a 4-digit from a 5-digit number. Nine items require regrouping.

Example:

5300 - 1274	A. 4126	C. 4136
	<u>B.</u> 4026	D. 4174

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	5.39	5.52	6.35
	Standard Deviation	3.92	3.99	3.75
	Mean Proportion Correct	.54	.55	.64
	Coefficient Alpha	.84	.86	.85
	Standard Error of Measurement	1.47	1.43	1.38
UPPER STRATA	Mean	8.76	8.92	9.23
	Standard Deviation	1.61	1.27	1.13
	Proportion near Ceiling	.77	.80	.88
MIDDLE STRATA	Mean	4.97	4.99	5.87
	Standard Deviation	3.37	3.73	3.34
	Proportion near Ceiling	.19	.29	.34

Revisions:

Five items were retained and combined with five items from 5M01 to form a single ten item scale.

5M02

Scale Reactivity

A to B

UPPER	-.13 (10) *	-.46 (5)	1.09 (11)	-.22 (6)
MIDDLE	-.45 (6)	-.36 (15)	1.38 (7)	.08 (16)
	10-59	60-119	120-240	over 240

* Mean Change
(n)Minutes
in Subtraction

B to C

UPPER	-.11 (6)	1.83 (4)	.06 (12)	1.17 (10)
MIDDLE	.96 (8)	1.59 (9)	.47 (12)	1.03 (11)
	0-9	10-59	60-119	over 120

Minutes
in SubtractionItem Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.76	-.02	+	
2	.74	.00	+	
3	.88	.00	F	
4	.48	.10	+	
5	.52	.02	F	
6	.65	.06	+	
7	.62	-.08	+	
8	.35	.06	F	
9	.50	.04	-	
10	.46	.00	-	

Grade 5 Mathematics 5M03

Scale Name: Multiplication of Whole Numbers

Description: Tests the student's ability to multiply whole numbers. Six items involve 1-digit multipliers and nine items have 2-digit multipliers. Nine items require regrouping in multiplication. Five items require regrouping in the addition of partial products.

Example:

$\begin{array}{r} 48 \\ \times 15 \\ \hline \end{array}$	A. 720 B. 700	C. 620 D. 288
--	-----------------------------	-----------------------------

Number of Items: 15Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	5.04	6.39	8.63
	Standard Deviation	4.90	5.20	5.09
	Mean Proportion Correct	.34	.43	.58
	Coefficient Alpha	.85	.86	.87
	Standard Error of Measurement	1.81	1.90	1.81
UPPER STRATA	Mean	10.27	11.01	13.05
	Standard Deviation	4.06	3.64	2.37
	Proportion near Ceiling	.47	.56	.82
MIDDLE STRATA	Mean	3.94	6.27	8.39
	Standard Deviation	3.18	4.71	4.64
	Proportion near Ceiling	.02	.18	.32

Revisions:

All fifteen items were retained and one item was added to form a sixteen item scale. Distractors were revised based on responses to the open ended testing of these same items in March, 1976, as part of the individual testing study (see Technical Note III-4).

5M03
Scale Reactivity

A to B

UPPER	.18 (13) *	.09 (11)		1.72 (6)
MIDDLE	2.56 (6)	1.67 (14)	2.96 (9)	3.31 (15)

0-149

150-299

300-449

over 450

Minutes

in Multiplication

* Mean Change
 (n)

B to C

UPPER	3.41 (9)	3.11 (3)	2.33 (19)	
MIDDLE	2.86 (7)		2.13 (20)	3.77 (13)

60-119

120-239

240-479

over 480

Minutes

in Multiplication

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A to B		B to C	
		Gain	Reactivity	Gain	Reactivity
1	.80	.02	+	.19	+
2	.80	.00	F	.12	+
3	.62	.19	-	.10	+
4	.48	.21	F	.02	+
5	.50	.17	-	.17	+
6	.26	.29	+	.02	-
7	.20	.19	+	.33	-
8	.18	.17	+	.21	-
9	.22	.06	F	.19	+
10	.30	.21	+	.12	F
11	.29	.20	+	.19	-
12	.19	.24	+	.07	-
13	.21	.22	+	.19	-
14	.19	.16	F	.12	F
15	.25	.16	+	.14	+

Grade 5 Mathematics

5M04

Scale Name:

Division of Whole Numbers

Description:

Tests the student's ability to divide whole numbers. Ten items have 1-digit divisors and the remaining five have 2-digit divisors. Quotients are from 1 to 3 digits. Six items involve remainders.

Example:

$$6 \overline{) 362}$$

A. 6

B. 62

C. 6 Remainder 2

☒ D. 60 Remainder 20
Number of Items:

15

Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	1.14	2.04	4.55
	Standard Deviation	3.42	4.01	4.97
	Mean Proportion Correct	.08	.14	.30
	Coefficient Alpha	.74	.79	.84
	Standard Error of Measurement	1.69	1.78	1.94
UPPER STRATA	Mean	3.69	5.60	9.55
	Standard Deviation	4.52	4.71	3.18
	Proportion near Ceiling	.09	.14	.24
MIDDLE STRATA	Mean	0.44	1.31	2.93
	Standard Deviation	2.03	3.27	3.85
	Proportion near Ceiling	.00	.02	.00

Revisions:

Scale was revised to be more appropriate for the middle strata ability group. Items #2, 9, 10, 11, 12, and 15 were dropped. The remaining nine items were retained and seven new items were added to form a sixteen item scale with less emphasis on 2-digit divisors. Scale is scheduled for inclusion in the B, C, and D testing occasions only.

5M04
Scale Reactivity

A to B

UPPER	1.10 (7)	2.40 (15)	.67 (4)	3.00 (6)
MIDDLE	-.25 (12)	1.20 (25)		1.94 (11)
	0-9	60-119	240-479	over 480

Minutes
in Division

* Mean Change
(n)

B to C

UPPER		-2.44 (3)	4.67 (19)	5.13 (10)
MIDDLE	-.88 (8)		2.46 (21)	2.18 (11)
	0-9	120-239	240-479	over 480

Minutes
in Division

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A to B		B to C	
		Gain	Reactivity	Gain	Reactivity
1	.19	.10	+	.24	-
2	.21	.24	F	.14	-
3	.15	.08	+	.10	+
4	.19	.16	+	.19	+
5	.12	.12	F	.10	+
6	.17	.16	+	.21	+
7	.08	.12	+	.12	+
8	.15	.22	+	.10	+
9	.17	.04	F	.07	-
10	.13	-.04	-	.12	F
11	.17	-.06	-	.10	-
12	.06	.14	-	-.05	+
13	.10	.00	-	.19	+
14	.13	.00	+	.14	+
15	.06	.06	+	.07	-

Grade 5 Mathematics 5M05

Scale Name: Speed Test

Description: Tests the student's ability to rapidly solve computational problems in addition(3 items), subtraction(3 items), multiplication(4 items), and division(4 items).

Example:

$\begin{array}{r} 43 \\ \times 2 \\ \hline \end{array}$	A. 96	C. 85
	<u>B.</u> 86	D. 41

Number of Items: 14Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	6.70	6.97	8.71
SAMPLE	Standard Deviation	2.72	2.99	2.94
	Mean Proportion Correct	.48	.50	.62
	Coefficient Alpha	.68	.72	.72
	Standard Error of Measurement	1.48	1.52	1.50
UPPER	Mean	8.85	9.66	11.07
STRATA	Standard Deviation	2.02	2.09	2.19
	Proportion near Ceiling	.12	.28	.50
MIDDLE	Mean	6.58	6.81	8.21
STRATA	Standard Deviation	1.95	2.50	2.33
	Proportion near Ceiling	.02	.02	.02

Revisions:

Scale revised into a fourteen item, one minute test on basic multiplication facts.

5M05
Scale Reactivity

A to B

UPPER

2.05 (7)	-1.04 (9)	1.37 (9)	1.30 (9)
0.58 (12)	0.47 (22)	-0.81 (7)	0.50 (8)

MIDDLE

0-9

10-59

60-119

over 120

Minutes

in Speed Tests

* Mean Change
 (n)

B to C

UPPER

1.17 (20)	2.00 (14)
1.99 (30)	1.17 (12)

MIDDLE

0-9

over 120

Minutes

in Speed Tests

Grade 5 Mathematics

5M07

Scale Name:

Equivalent Fractions

Description:

Tests the student's ability to identify equivalent fractions. Includes reducing fractions and finding the missing numerator or denominator in a fractional equation.

Example:

What does N equal?

$$\frac{3}{N} = \frac{9}{12}$$

A. 6

B. 12

☒ C. 4

D. 3

Number of Items:

10

Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	-0.17	0.02	1.92
	Standard Deviation	1.67	1.87	3.23
	Mean Proportion Correct	-.02	.00	.19
	Coefficient Alpha	.50	.47	.78
	Standard Error of Measurement	1.12	1.29	1.44
UPPER STRATA	Mean	0.47	0.94	4.68
	Standard Deviation	2.07	2.63	3.34
	Proportion near Ceiling	.00	.00	.24
MIDDLE STRATA	Mean	-0.36	-0.36	1.17
	Standard Deviation	1.15	1.51	3.02
	Proportion near Ceiling	.00	.00	.04

Revisions:

5M07, 08, and 09 were collapsed into one fifteen item scale on fractions which is scheduled for inclusion in the B, C, and D test occasions. The five most reactive items (for the middle strata group) from each scale were selected for inclusion.

For equivalent fractions, items #1, 2, 4, 6, and 7 were retained.

5M07
Scale Reactivity

A to B		
UPPER	0.52* (33)	0
MIDDLE	0.08 (47)	0
	0-9	over 9

* Mean Change
 (n)

Minutes
 in Equivalent Fractions

B to C			
UPPER	0.73 (10)	0	4.70 (21)
MIDDLE	0.29 (8)	0	1.94 (34)
	0-9	10-239	240-480

Minutes
 in Equivalent Fractions

Item Reactivity (Middle Strata)

Item #	Proportion Correct at B	B Gain	to C Reactivity
1	.12	.21	+
2	.05	.17	+
3	.17	.14	+
4	.05	.29	+
5	.07	.29	F
6	.14	.24	+
7	.10	.14	+
8	.10	-.05	-
9	.17	.05	+
10	.07	.21	-

Grade 5 Mathematics 5M08

Scale Name: Addition of Fractions

Description: Tests the student's ability to add fractions. Seven items involve the addition of two proper fractions with four of these items having sums greater than 1 (expressed as mixed numbers). Three items involve the addition of mixed numbers. Three items have unlike denominators.

Example:

$$\frac{3}{6} + \frac{2}{6} = \square$$

A. $\frac{5}{12}$

(B.) $\frac{5}{6}$

C. $\frac{1}{6}$

D. $\frac{12}{18}$

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	-0.82	-0.80	0.79
	Standard Deviation	1.95	2.55	3.58
	Mean Proportion Correct	-.08	-.08	.08
	Coefficient Alpha	.70	.79	.86
	Standard Error of Measurement	1.01	1.11	1.28
UPPER STRATA	Mean	-0.46	1.17	3.13
	Standard Deviation	2.62	3.53	4.51
	Proportion near Ceiling	.00	.00	.18
MIDDLE STRATA	Mean	-1.13	-1.69	0.26
	Standard Deviation	1.67	1.72	2.86
	Proportion near Ceiling	.00	.00	.00

Revisions:

Items #1, 2, 5, 8, and 9 were retained. See comments under 5M07 for organizational revisions.

5M08
Scale Reactivity

A to B		
UPPER	0.75* (25)	3.87 (8)
MIDDLE	-0.65 (48)	

0-9

over 60

Minutes

in Addition of Fractions

* Mean Change
 (n)

B to C				
UPPER	-0.67 (3)	-2.77 (3)	1.08 (16)	6.13 (10)
MIDDLE	1.50 (6)	0.67 (2)	1.08 (26)	5.04 (8)

0-9

60-119

120-239

240-480

Minutes

in Addition of Fractions

Item Reactivity (Middle Strata)

Item #	Proportion Correct at B	B Gain	to C Reactivity
1	.24	.29	+
2	.10	.36	+
3	.02	.00	+
4	.00	.07	+
5	.02	.14	+
6	.00	.05	+
7	.05	.19	+
8	.07	.21	+
9	.12	.26	+
10	.12	.00	F

Grade 5 Mathematics 5M09

Scale Name: Subtraction of Fractions

Description: Tests the student's ability to subtract fractions. Five items involve the subtraction of a proper fraction from a whole number or mixed number. Three items involve the subtraction of a mixed number from a mixed number. Two items include unlike denominators.

Example:

$$6 - \frac{1}{3} = \square$$

A. $4 \frac{2}{3}$ B. $6 \frac{1}{3}$ C. $5 \frac{2}{3}$ D. 5

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	1.12	1.51	2.82
	Standard Deviation	2.05	2.59	3.13
	Mean Proportion Correct	.11	.16	.28
	Coefficient Alpha	.38	.66	.77
	Standard Error of Measurement	1.52	1.42	1.42
UPPER STRATA	Mean	2.35	3.57	5.66
	Standard Deviation	2.74	2.81	2.89
	Proportion near Ceiling	.03	.00	.27
MIDDLE STRATA	Mean	0.71	1.37	2.71
	Standard Deviation	1.38	2.01	2.44
	Proportion near Ceiling	.00	.00	.00

Revisions:

Items 1, 4, 6, and 9 were retained. Item 7 was revised to balance the range of item difficulty. See 5M07 for organizational revisions.

5M09
Scale Reactivity

A to B	
UPPER	1.18* (33)
MIDDLE	0.69 (49)

0-9

over 9

Minutes

* Mean Change
(n)

in Subtraction of Fractions

B to C			
UPPER	0.27 (5)	1.15 (11)	1.33 (8)
MIDDLE	0.38 (8)	0.33 (11)	2.04 (16)

0-59

60-119

120-239

240-480

Minutes

in Subtraction of Fractions

Item Reactivity (Middle Strata)

Item #	Proportion Correct at B	B Gain	to C Reactivity
1	.33	.38	+
2	.19	-.02	+
3	.12	.00	-
4	.44	.21	+
5	.14	.05	F
6	.33	.14	+
7	.33	.21	+
8	.16	-.07	-
9	.40	.14	+
10	.19	.12	+

Grade 5 Mathematics 5M10

Scale Name: Addition and Subtraction of DecimalsDescription: Tests the student's ability to add and subtract decimal fractions in both a vertical and horizontal format. Five items involve money notation.Example:

$\begin{array}{r} .7 \\ + .4 \\ \hline \end{array}$	$\$9.72 - \$6.98 =$
A. .11 ☒ C. 1.1	☒ A. \$2.74 C. \$.274
B. 1.01 D. 11.0	B. \$2.84 D. \$37.4

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	2.91	3.78	4.65
SAMPLE	Standard Deviation	2.88	3.44	3.31
	Mean Proportion Correct	.29	.38	.47
	Coefficient Alpha	.66	.76	.74
	Standard Error of Measurement	1.60	1.58	1.59
UPPER	Mean	5.68	7.54	7.54
STRATA	Standard Deviation	2.20	2.18	1.91
	Proportion near Ceiling	.11	.50	.41
MIDDLE	Mean	1.91	3.32	4.43
STRATA	Standard Deviation	2.28	2.81	2.72
	Proportion near Ceiling	.00	.08	.11

Revisions:

Deleted from the A, B, C, & D test battery. Included in the screening (selection) test.

5M10
Scale Reactivity

A to B

UPPER	2.35 [*] (18)	2.50 (6)	0.80 (10)
MIDDLE	1.71 (29)	2.45 (11)	0.37 (8)

0-9

10-29

30-60

Minutes

in Addition and Subtraction
 of Decimals

* Mean Change
 (n)

B to C

UPPER	0.51 (22)	-0.11 (3)	1.39 (6)
MIDDLE	0.93 (35)		0.50 (6)

0-9

10-59

over 120

Minutes

in Addition and Subtraction
 of Decimals

Grade 5 Mathematics

5M12A

Scale Name:

Decimal Place Value

Description:

Tests the student's knowledge of decimal place value involving tenths, hundredths, and thousandths. Includes the comparing and ordering of decimal numbers.

Example:

In the numeral 47.65, which digit is in the tenths place?

A. 4 B. 7 C. 6 D. 5

Number of Items: 6Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	0.40	0.66	0.84
SAMPLE	Standard Deviation	1.40	1.31	1.40
	Mean Proportion Correct	.07	.11	.14
	Coefficient Alpha	.13	.00	.03
	Standard Error of Measurement	1.20	1.21	1.26
UPPER	Mean	1.11	1.18	1.73
STRATA	Standard Deviation	1.19	1.27	1.55
	Proportion near Ceiling	.00	.03	.06
MIDDLE	Mean	0.36	0.46	0.66
STRATA	Standard Deviation	1.46	1.28	1.14
	Proportion near Ceiling	.00	.00	.00

Revisions:

Scale has been deleted. Little or no time was allocated to classroom instruction in decimal place value.

5M12A
Scale Reactivity

A to B

UPPER

0.09*
(26)0.03
(10)

MIDDLE

0.00
(42)0.71
(8)

0-9

10-29

Minutes
 in Decimal Place Value

* Mean Change
 (n)

B to C

UPPER

0.57
(27)-0.07
(5)

MIDDLE

0.16
(39)0.17
(4)

0-9

10-29

Minutes
 in Decimal Place Value

Grade 5 Mathematics

5M12B

Scale Name:

Whole Number Place Value

Description:

Tests the student's knowledge of whole numbers through millions. Includes expanded notation and the recognition of a verbal (script) numeral for a standard numeral.

Example:

The planet Jupiter's mean distance from the sun is 887 million 1 hundred 40 thousand miles. How is this number written?

A. 887,140,000,000

C. 8,870,140,000

☒ B. 887,140,000

D. 887,001,400,000

Number of Items:

4

Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	0.20	0.31	0.57
	Standard Deviation	1.07	1.37	1.34
	Mean Proportion Correct	.05	.08	.14
	Coefficient Alpha	.00	.37	.22
	Standard Error of Measurement	1.00	0.94	1.02
UPPER STRATA	Mean	0.22	1.25	1.05
	Standard Deviation	1.04	1.39	1.53
	Proportion near Ceiling	.03	.31	.30
MIDDLE STRATA	Mean	0.23	-0.13	0.60
	Standard Deviation	1.20	1.04	1.33
	Proportion near Ceiling	.02	.02	.14

Revisions:

Revised into a new ten item scale with increased emphasis on the reading and "writing" of numerals through millions and the identification of a digit's value within a numeral. Revisions based on recommendations given by the mathematics advisors.

5M12B
Scale Reactivity

A-194

	A to B		
UPPER	0.92 [*] (17)	1.86 (7)	0.70 (12)
MIDDLE	0.03 (21)	-1.44 (12)	-0.06 (17)
	0-9	10-29	30-59
	Minutes in Whole Number Place Value		

* Mean Change
 (n)

	B to C	
UPPER	-0.17 (25)	-0.63 (8)
MIDDLE	0.88 (26)	0.75 (16)
	0-9	10-29
	Minutes in Whole Number Place Value	

Grade 5 Mathematics 5M13

Scale Name: Properties

Description: Tests the student's knowledge of the commutative, associative and distributive properties as well as the inverse relationship between addition-subtraction and multiplication-division. Eight of the items are open ended and three items used letters to stand for whole numbers.

Example:

What number goes in the ?

$$5 \times (2+3) = (5 \times \text{input}) + (5 \times 3)$$

$$\text{input} = \underline{\hspace{2cm}}$$

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	1.11	2.84	3.62
	Standard Deviation	4.45	4.27	4.04
	Mean Proportion Correct	.11	.28	.36
	Coefficient Alpha	.80	.77	.74
	Standard Error of Measurement	1.88	1.96	1.97
UPPER STRATA	Mean	4.78	5.47	6.82
	Standard Deviation	3.63	3.55	2.11
	Proportion near Ceiling	.24	.36	.41
MIDDLE STRATA	Mean	0.37	2.49	2.97
	Standard Deviation	3.96	4.38	3.78
	Proportion near Ceiling	.06	.12	.21

Revisions:

Three items were replaced and four were modified with the inclusion of larger numbers. All items became open ended. These items were combined with the items from 5M14 and 5M24 to form a 26 item computational transfer scale.

5M13

Scale Reactivity

A to B

UPPER	1.15 [*] (20)	0.75 (4)	-0.11 (9)
MIDDLE	1.70 (29)	3.90 (5)	1.97 (15)

0-9

10-29

over 30

Minutes

in Properties

* Mean Change
(n)

B to C

UPPER	1.32 (34)	0
MIDDLE	1.02 (42)	0

0-9

over 10

Minutes

in Properties

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B **
2	.13	.12	+	
3	.42	.02	-	
4	.21	.16	+	
6	.25	.33	-	
7	.33	.24	F	
8	.35	.12	F	

** Note: Item reactivity was examined using a combined time category. Because these items will be used as part of the Computational Transfer scale in Phase III-B and because specific reactivity was not strong, a combined Computational Transfer time (5M13 + 5M14 + 5M24) was used for all 3 scales. No item reactivity data were available for items 1, 5, 9 and 10.

Grade 5 Mathematics

5M14

Scale Name:

Factors and Prime Factorization

Description:

Requires the student to identify a pair of factors, a set of factors, the common factors, or the missing factor within a factorial equation.

Example:

What number names the missing factor?

$$24 = 2 \times \square \times 4$$

(A.) 3 B. 4 C. 2 D. 6

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	2.86	2.72	4.28
	Standard Deviation	3.10	3.08	3.31
	Mean Proportion Correct	.29	.27	.43
	Coefficient Alpha	.72	.70	.74
	Standard Error of Measurement	1.57	1.61	1.61
UPPER STRATA	Mean	5.94	5.79	7.31
	Standard Deviation	2.28	2.72	1.80
	Proportion near Ceiling	.14	.21	.32
MIDDLE STRATA	Mean	2.19	1.80	3.89
	Standard Deviation	2.45	2.72	2.93
	Proportion near Ceiling	.00	.02	.07

Revisions:

As recommended by the math advisory committee this scale was revised. Eight new items in an open ended factor format were developed and combined with the items from 5M13 and 5M24 to form the computational transfer scale.

5M14
Scale Reactivity

A to B		
UPPER	-0.12* (34)	0
MIDDLE	-0.34 (48)	0
	0-9	over 10
	Minutes in Factors	

* Mean Change
(n)

* Mean Change
(n)

B to C			
UPPER	2.94 (11)	0.70 (9)	1.19 (12)
MIDDLE	1.88 (27)	3.37 (8)	2.48 (7)
	0-9	10-59	over 120
Minutes in Factors			

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B **
1	.80	-.06	+	
2	.32	.06	F	
3	.40	.04	+	
4	.48	-.08	-	
5	.22	.08	+	
6	.44	-.04	-	
7	.10	.02	F	
8	.20	.02	F	
9	.24	-.04	-	
10	.34	-.13	-	

** Note: Item reactivity was examined using a combined time category. Because these items will be used as part of the Computational Transfer scale in Phase III-B and because specific reactivity was not strong, a combined Computational Transfer time (5M13 + 5M14 + 5M24) was used for all 3 scales.

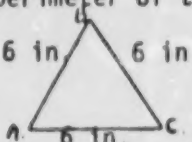
Grade 5 Mathematics 5M16

Scale Name: Perimeter

Description: Requires the student to compute the perimeter of a polygon using standard or arbitrary units of measure. Three items refer to one scale drawing.

Example:

What is the perimeter of triangle ABC?



A. 36 inches C. 28 inches
☒ B. 18 inches D. 12 inches

Number of Items: 8Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL	Mean	1.26	1.87	2.53
SAMPLE	Standard Deviation	2.15	2.30	2.48
	Mean Proportion Correct	.16	.23	.32
	Coefficient Alpha	.56	.59	.64
	Standard Error of Measurement	1.34	1.37	1.39
UPPER	Mean	2.58	3.41	4.13
STRATA	Standard Deviation	2.44	1.82	2.05
	Proportion near Ceiling	.14	.06	.18
MIDDLE	Mean	0.75	2.18	2.59
STRATA	Standard Deviation	1.81	2.28	2.45
	Proportion near Ceiling	.02	.08	.07

Revisions:

Reduced to five items involving standard units only. Includes item #2 and items similar to #3 and #4. Incorporated in the total Geometry scale which includes items from 5M17, 19, 20, 22, and 23. Scale may be analyzed separately, in a subset with 5M17, or as part of total Geometry.

5M16
Scale Reactivity

A to B			
UPPER	0.46 [*] (18)	1.87 (5)	1.00 (11)
MIDDLE	1.25 (30)	2.37 (10)	1.57 (7)
	0-9	30-59	over 60

* Mean Change
 (n)

Minutes
 in Perimeter

B to C			
UPPER	0.26 (14)		1.64 (15)
MIDDLE	0.14 (17)	1.11 (12)	0.10 (13)
	0-9	10-59	over 120

Minutes
 in Perimeter

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.10	.23	+	
2	.27	.36	+	
3	.21	.23	+	
4	.40	.13	+	
5	.23	.26	F	
6	.21	.09	F	
7	.33	-.11	F	
8	.15	.02	-	

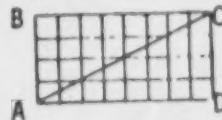
Grade 5 Mathematics 5M17

Scale Name: Area

Description: Requires the student to compute the area of a polygon using standard units (3 items) or arbitrary units (3 items) of measure.

Example:

What is the area of the triangular region ACD? Each square = 1 sq. unit.



- A. 18 sq. units ☒ C. 16 sq. units
B. 24 sq. units D. 32 sq. units

Number of Items: 6Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	0.36	0.80	1.28
	Standard Deviation	1.27	1.48	1.35
	Mean Proportion Correct	.06	.13	.21
	Coefficient Alpha	.16	.32	.03
	Standard Error of Measurement	1.06	1.11	1.22
UPPER STRATA	Mean	0.85	1.45	2.03
	Standard Deviation	1.29	1.49	1.06
	Proportion near Ceiling	.00	.03	.03
MIDDLE STRATA	Mean	0.26	0.87	1.40
	Standard Deviation	1.12	1.50	1.33
	Proportion near Ceiling	.00	.02	.02

Revisions:

Reduced to five items involving standard and arbitrary units of measure. Retained items #1 and 3. Item 5 modified and used for both perimeter and area.

UPPER

0.24 [*] (18)	1.10 (13)	1.00 (3)
0.25 (30)	0.92 (8)	1.33 (7)

30-59

Minutes
in Area

* Mean Change
(n)

UPPER

1.40 (5)	0.44 (12)	0.17 (14)
0.53 (10)	0.56 (19)	0.72 (13)

10-59

Minutes
in Area

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.35	.13	+	
2	.17	.06	+	
3	.25	.06	+	
4	.13	.04	+	
5	.06	.09	+	
6	.08	.06	F	

Grade 5 Mathematics

5M18

Scale Name:

Volume

Description:

Requires the student to compute the volume of a space figure using arbitrary units (3 items) or standard units (2 items) of measure.

Example:

 = 1 cubic unit

How many cubic units are in this figure?



(A) 18 cu. units C. 12 cu. units
B. 21 cu. units D. 15 cu. units

Number of Items: 5Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	0.07	0.11	0.57
	Standard Deviation	1.09	1.18	1.51
	Mean Proportion Correct	.01	.02	.11
	Coefficient Alpha	.24	.25	.45
	Standard Error of Measurement	0.85	0.91	1.00
UPPER STRATA	Mean	0.20	0.49	1.11
	Standard Deviation	1.16	1.29	1.76
	Proportion near Ceiling	.00	.03	.18
MIDDLE STRATA	Mean	0.08	-0.02	0.53
	Standard Deviation	1.04	1.20	1.33
	Proportion near Ceiling	.00	.00	.07

Revisions:

Scale deleted. Very little allocated time in this category.

5M18
Scale Reactivity

A to B

UPPER	0.00 [*] (23)	0.70 (11)
MIDDLE	0.01 (40)	-0.29 (7)

0-9

30-59

Minutes
 in Volume

* Mean Change
 (n)

B to C

UPPER	0.02 (22)	2.52 (9)
MIDDLE	0.19 (35)	2.38 (7)

0-9

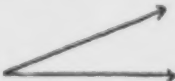
over 120

Minutes
 in Volume

Grade 5 Mathematics 5M19

Scale Name: LinesDescription: Tests the student's ability to recognize and identify lines, line segments, angles, parallel and perpendicular lines.Example:

What is the name of this figure?



A. Chord C. Ray
B. Line Segment **D. Angle**

Number of Items: 8Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	0.95	1.45	2.28
	Standard Deviation	1.67	2.19	2.45
	Mean Proportion Correct	.12	.18	.29
	Coefficient Alpha	.16	.55	.61
	Standard Error of Measurement	1.43	1.37	1.42
UPPER STRATA	Mean	1.95	2.95	3.96
	Standard Deviation	1.97	2.57	2.59
	Proportion near Ceiling	.03	.11	.27
MIDDLE STRATA	Mean	0.66	0.96	1.89
	Standard Deviation	1.31	1.79	2.09
	Proportion near Ceiling	.00	.00	.05

Revisions:

Reduced to three items and combined with three items from 5M20. Together they comprise a subset of the total Geometry scale. See comments under 5M16.

5M19
Scale Reactivity

	A to B		
UPPER	-0.30 [*] (20)	2.93 (5)	2.49 (11)
MIDDLE	-0.11 (33)	0.74 (9)	1.25 (8)
	0-9	10-29	over 60
	Minutes in Lines		

* Mean Change
(n)

	B to C			
UPPER	0.33 (9)	0.93 (5)	0.74 (9)	2.40 (10)
MIDDLE	0.59 (22)	1.07 (5)	0.52 (7)	1.96 (9)
	0-9	10-59	60-119	over 120
	Minutes in Lines			

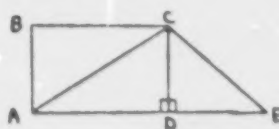
Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.12	-.10		F
2	.23	.16		+
3	.19	.04		F
4	.35	.24		+
5	.21	-.06		F
6	.15	.02		+
7	.23	.20		+
8	.31	-.06		F

Grade 5 Mathematics 5M20

Scale Name: Plane FiguresDescription: Tests the student's ability to recognize and identify a parallelogram, rectangle, square and right triangle.Example:

What is the name of the geometric figure ACD?



- ☒ A. Right triangle
☐ B. Obtuse triangle
☐ C. Parallelogram
☐ D. Rectangle

Number of Items: 4Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	1.23	1.61	2.12
	Standard Deviation	1.46	1.47	1.41
	Mean Proportion Correct	.31	.40	.53
	Coefficient Alpha	.41	.46	.41
	Standard Error of Measurement	0.97	0.94	0.94
UPPER STRATA	Mean	2.17	2.52	3.10
	Standard Deviation	1.43	1.29	1.10
	Proportion near Ceiling	.56	.61	.76
MIDDLE STRATA	Mean	1.01	1.76	2.04
	Standard Deviation	1.32	1.17	1.12
	Proportion near Ceiling	.08	.39	.50

Revisions:

Items #1, 3, and 4 retained with some revision. See 5M19 for organizational revisions.

5M20
Scale Reactivity

A to B

UPPER	-0.21* (13)	0.00 (12)	1.36 (11)
MIDDLE	0.60 (21)	0.67 (21)	1.33 (8)

0-9

10-29

over 60

Minutes

* Mean Change
 (n)

in Geometric Figures

B to C

UPPER	0.52 (18)	-0.47 (5)	1.34 (10)
MIDDLE	0.29 (29)	0.47 (5)	0.22 (9)

0-9

30-59

over 60

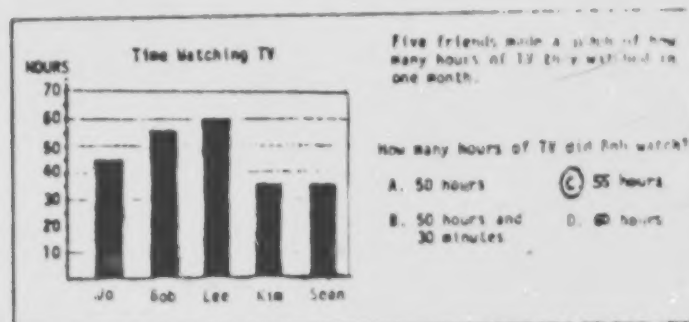
Minutes

in Geometric Figures

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.44	.24	+	
2	.29	.16	F	
3	.48	.22	-	
4	.25	.06	+	

Grade 5 Mathematics 5M22

Scale Name: Line and Bar GraphsDescription: Tests the student's ability to interpret line and bar graphs. There are 2 line graphs with one question each and 2 bar graphs with three questions each.Example:Number of Items: 8Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	2.93	3.87	4.45
	Standard Deviation	2.26	2.48	2.33
	Mean Proportion Correct	.37	.48	.56
	Coefficient Alpha	.55	.67	.63
	Standard Error of Measurement	1.41	1.33	1.33
UPPER STRATA	Mean	4.70	5.62	5.76
	Standard Deviation	2.00	1.75	1.93
	Proportion near Ceiling	.28	.44	.46
MIDDLE STRATA	Mean	2.44	3.62	4.27
	Standard Deviation	1.78	2.12	1.94
	Proportion near Ceiling	.04	.12	.24

Revisions:

Reduced to two line graph items and combined with 5M23 to comprise a subset of the total Geometry scale. Item #1 was retained and #2 was revised to be parallel to #1.

5M22
Scale Reactivity

A to B			
UPPER	1.02 [*] (18)	0.70 (10)	0.87 (5)
MIDDLE	0.99 (30)	1.82 (11)	1.45 (6)
	0-9	10-29	30-59

* Mean Change
 (n)

Minutes
 in Line and Bar Graphs

B to C			
UPPER	-0.50 (12)	0.55 (9)	0.80 (10)
MIDDLE	0.44 (28)	0.76 (7)	1.19 (7)
	0-9	10-29	over 60

Minutes

in Line and Bar Graphs

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.17	.21	+	
2	.28	.00	-	

Item reactivity only available for these two items
 (both line graph items).

Grade 5 Mathematics 5M23

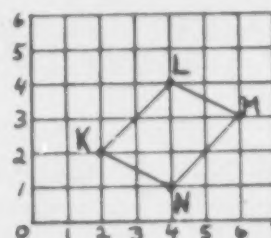
Scale Name: Number PairsDescription: Tests the student's ability to identify number pairs on a number plane.Example:

What is the number pair for point M on this graph?

A. (2,2)

B. (4,4)

C. (3,6)

☒ D. (6,3)Number of Items: 4Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	0.20	0.88	1.47
	Standard Deviation	1.38	1.83	2.18
	Mean Proportion Correct	.05	.22	.37
	Coefficient Alpha	.45	.69	.85
	Standard Error of Measurement	0.89	0.89	0.73
UPPER STRATA	Mean	0.27	1.31	2.30
	Standard Deviation	1.80	2.40	2.45
	Proportion near Ceiling	.17	.44	.70
MIDDLE STRATA	Mean	0.13	0.84	1.31
	Standard Deviation	1.32	1.73	2.20
	Proportion near Ceiling	.04	.14	.42

Revisions:

Organizational revisions only. See comments under 5M22. All items retained.

5M23
Scale Reactivity

A to B

UPPER	-0.28 (13)	-2.13 (5)	3.33 (12)	1.59 (4)
MIDDLE	0.08 (24)	0.22 (6)	1.33 (9)	2.04 (8)

0-9

10-29

30-59

over 60

Minutes
 in Number Pairs

* Mean Change
 (n)

B to C

UPPER	-0.14 (14)	-0.67 (2)	2.95 (15)
MIDDLE	0.18 (17)	-0.92 (12)	1.75 (13)

0-9

10-29

over 60

Minutes

in Number Pairs

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B
1	.27	.17	+	
2	.19	.11	+	
3	.29	.19	F	
4	.17	.13	+	

Grade 5 Mathematics

5M24

Scale Name:

Number Patterns

Description:

Tests the student's ability to identify the number or letter which is missing and/or identify the rule by which it can be found. Six items involve sequences, two involve "magic squares", and two involve input/output patterns.

Example:

Which number pair completes the set?

(1,1), (2,4), (3,9), (7,?)

A. (4,12) ☒ C. (4,16)

B. (4,11) D. (5,15)

Number of Items: 10Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	2.21	2.63	3.58
	Standard Deviation	2.25	2.35	2.45
	Mean Proportion Correct	.22	.26	.36
	Coefficient Alpha	.51	.54	.55
	Standard Error of Measurement	1.49	1.51	1.56
UPPER STRATA	Mean	3.68	4.84	5.59
	Standard Deviation	2.09	1.97	1.78
	Proportion near Ceiling	.00	.03	.09
MIDDLE STRATA	Mean	1.84	2.13	3.50
	Standard Deviation	2.01	1.92	1.80
	Proportion near Ceiling	.00	.00	.00

Revisions:

Revised and incorporated as subset of the computational transfer scale. Eight items were revised or replaced to increase the emphasis on multiplication and division patterns as recommended by the math advisory committee.

5M24
Scale Reactivity

A to B			
UPPER	-0.02 * (15)	1.79 (8)	2.27 (10)
	0.26 (34)	-0.39 (6)	1.14 (7)
MIDDLE			
	0-9	10-29	30-59
	Minutes		
	in Number Patterns		
* Mean Change (n)			

B to C		
UPPER	1.17 (26)	0.40 (5)
MIDDLE	1.05 (33)	0.59 (9)
	0-9	10-29
	Minutes in Number Patterns	

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity ^{**}
1	.42	.17	+
2	.46	.19	+
3	.40	.11	-
4	.27	.04	+
5	.06	-.02	+
6	.54	.26	+
7	.29	-.19	-
8	.15	.00	+
9	.17	-.09	+
10	.23	-.15	F

^{**} Note: Item reactivity was examined using a combined time category. Because these items will be used as part of the Computational Transfer scale in Phase III-B and because specific reactivity was not strong for other scales in the group, a combined Computational Transfer time (5M13 + 5M14 + 5M24) was used for all 3 scales.

Grade 5 Mathematics 5M26A

Scale Name: One-Step Word ProblemDescription: Tests the student's ability to solve one-step word problems involving any whole number operation.Example:

John has 96 marbles which he wants to put into sets of 8. How many complete sets can he make?

- A. 10 ☒ C. 12
B. 8 D. 88

Number of Items: 4Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	1.03	1.10	1.58
	Standard Deviation	1.49	1.58	1.56
	Mean Proportion Correct	.26	.28	.40
	Coefficient Alpha	.36	.52	.47
	Standard Error of Measurement	1.03	0.95	0.99
UPPER STRATA	Mean	2.08	2.06	2.67
	Standard Deviation	1.50	1.60	1.19
	Proportion near Ceiling	.56	.53	.76
MIDDLE STRATA	Mean	0.89	0.98	1.37
	Standard Deviation	1.25	1.38	1.46
	Proportion near Ceiling	.21	.23	.36

Revisions:

Word problem scales 5M26A through 5M28 were collapsed into one twelve item scale. Eight items were selected for inclusion in this scale and four new items were added.

Items #2 and 4 were retained. Selection of items to be retained from scales 5M26A to 5M28 was based on standard correlational statistics and supplemented by the reactivity data.

5M26A
Scale Reactivity

	A to B			
UPPER	-.37 (10) *	-.10 (21)	.93 (5)	
MIDDLE	.00 (10)	-.06 (32)	1.67 (2)	-.07 (5)
	0-9	10-59	60-119	over 240
	Minutes			
	in One-Step Word Problems			

* Mean Change
 (n)

	B to C			
UPPER	.84 (21)	-.37 (10)	1.84 (2)	
MIDDLE	.54 (19)	.46 (18)	-1.33 (2)	.00 (4)
	0-9	10-59	60-119	over 120
	Minutes			
	in One-Step Word Problems			

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A to B		B to C	
		Gain	Reactivity**	Gain	Reactivity
1	.33	.06	-	-.05	-
2	.44	.14	+	.07	F
3	.42	-.12	-	.07	F
4	.33	-.06	+	.21	-

** Note: Item reactivity for all word problems was examined using total time in word problems as a measure of opportunity to learn. This was true for both the A-B and the B-C periods.

Grade 5 Mathematics 5M26B

Scale Name: Two-Step Word ProblemsDescription: Tests the student's ability to solve two-step word problems involving any whole number operation.Example:

Dick, John, and Lisa each made 14 model airplanes. They gave half of their airplanes to the school. How many did they give altogether?

- A. 7 C. 21
B. 42 D. 14

Number of Items: 7Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	1.06	1.57	1.69
	Standard Deviation	1.76	2.05	2.28
	Mean Proportion Correct	.15	.22	.24
	Coefficient Alpha	.35	.53	.62
	Standard Error of Measurement	1.31	1.30	1.31
UPPER STRATA	Mean	2.44	2.88	3.91
	Standard Deviation	1.71	2.12	1.94
	Proportion near Ceiling	.06	.17	.30
MIDDLE STRATA	Mean	0.51	1.29	1.57
	Standard Deviation	1.32	1.89	1.85
	Proportion near Ceiling	.00	.02	.00

Revisions:

Items #3, 4, and 6 were retained. See comments under 5M26A.

5M26B
Scale Reactivity

A to B

UPPER	0.09 [*] (22)	1.08 (13)	
MIDDLE	0.43 (28)	1.39 (17)	0.67 (4)

0-9

10-59

over 120

Minutes

* Mean Change
(n)

in Two-Step Word Problems

B to C

UPPER	1.05 (30)	0.11 (3)	
MIDDLE	0.29 (30)	0.00 (8)	0.66 (5)

0-9

60-119

over 120

Minutes

in Two-Step Word Problems

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A to B		B to C	
		Gain	Reactivity**	Gain	Reactivity
1	.71	-.04	F	-.07	-
2	.08	.10	+	.05	F
3	.15	.16	-	.16	+
4	.27	.10	+	-.07	+
5	.25	.06	+	-.02	-
6	.19	.14	+	.12	+
7	.06	.06	-	.16	F

** Note: Item reactivity for all word problems was examined using total time in word problems as a measure of opportunity to learn. This was true for both the A-B and the B-C periods.

Grade 5 Mathematics 5M27

Scale Name: Word Problems - AveragesDescription: Tests the student's ability to solve one-and two-step word problems involving the use of averages or the computation of an averageExample:

Gordon received scores of 64, 77, 70, and 85 on his math tests. What was his average score?

☒ A. 74 B. 71 C. 21 D. 148

Number of Items: 7Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	0.60	0.87	1.51
	Standard Deviation	1.61	1.89	1.81
	Mean Proportion Correct	.09	.12	.22
	Coefficient Alpha	.18	.43	.28
	Standard Error of Measurement	1.35	1.32	1.42
UPPER STRATA	Mean	1.62	2.01	2.94
	Standard Deviation	1.52	1.80	1.65
	Proportion near Ceiling	.00	.11	.03
MIDDLE STRATA	Mean	0.47	0.67	1.22
	Standard Deviation	1.53	1.92	1.66
	Proportion near Ceiling	.02	.00	.02

Revisions:

Item #2 was retained. See comments under 5M26A.

5M27
Scale Reactivity

A to B

UPPER	0.76* (26)	-0.57 (10)
MIDDLE	0.20 (40)	-0.07 (10)

0-10

60-119

Minutes
 in Averages

* Mean Change
 (n)

B to C

UPPER	0.93 (28)	-0.75 (4)
MIDDLE	0.67 (43)	0

0-9

over 60

Minutes
 in Averages

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A Gain	to Reactivity	B Gain	to Reactivity	C Gain	to Reactivity
1	.23	-.04	F	-.07	-	-	-
2	.35	-.14	+	.26	F	-	-
3	.23	.00	-	-.07	-	-	-
4	.29	.08	F	.12	-	-	-
5	.29	.08	F	.07	-	-	-
6	.19	.02	+	.16	-	-	-
7	.10	.16	F	.09	F	-	-

**Note: Item reactivity for all word problems was examined using total time in word problems as a measure of opportunity to learn. This was true for both the A-B and the B-C periods.

Grade 5 Mathematics

5M28

Scale Name:

Word Problems - Common Measures

Description:

Tests the student's ability to solve one and two step word problems involving the use of "common measures", i.e., yards, feet, inches, gallons, pints, and money.

Example:

During a track meet, Wendy ran the 100 yard dash in 40 seconds. How many feet did she run?

A. 33 feet

C. 250 feet

☒ B. 300 feet

D. 400 feet

Number of Items: 5Scale Statistics, by Group:

		Test Occasion		
		A	B	C
TOTAL SAMPLE	Mean	0.31	0.22	0.69
	Standard Deviation	1.37	1.35	1.46
	Mean Proportion Correct	.06	.04	.14
	Coefficient Alpha	.26	.23	.27
	Standard Error of Measurement	1.06	1.06	1.12
UPPER STRATA	Mean	1.22	1.25	1.73
	Standard Deviation	1.46	1.37	1.53
	Proportion near Ceiling	.08	.11	.18
MIDDLE STRATA	Mean	0.01	0.04	0.49
	Standard Deviation	1.11	1.03	1.29
	Proportion near Ceiling	.00	.00	.02

Revisions:

Items #1 and 5, which both involve money, were retained. See comments under 5M26A.

5M28
Scale Reactivity

A to B				
UPPER	-0.55 (17)	-1.33 (2)	0.81 (9)	0.71 (8)
	-0.03 (26)	0.09 (4)	-0.17 (8)	0.03 (12)
MIDDLE				
	0-9	10-29	30-59	over 60

* Mean Change
 (n)

Minutes
 in Word Problems with
 Common Measures

B to C		
UPPER	0.24 (33)	0
MIDDLE	0.49 (43)	0
	0-9	over 10

Minutes
 in Word Problems with
 Common Measures

Item Reactivity (Middle Strata)

Item #	Proportion Correct at A	A to B		B to C	
		Gain	Reactivity **	Gain	Reactivity
1	.38	.02	+	.07	F
2	.13	.00	-	.05	-
3	.15	.04	-	.09	+
4	.10	-.02	+	.00	-
5	.23	-.04	+	.19	-

** Note: Item reactivity for all word problems was examined using total time in word problems as a measure of opportunity to learn. This was true for both the A-B and the B-C periods.

APPENDIX B

Teacher Record-Keeping Materials:

Instructions
Log Forms
Examples

COMMISSION FOR TEACHER PREPARATION AND LICENSING

B-1

1020 O STREET
SACRAMENTO 95814

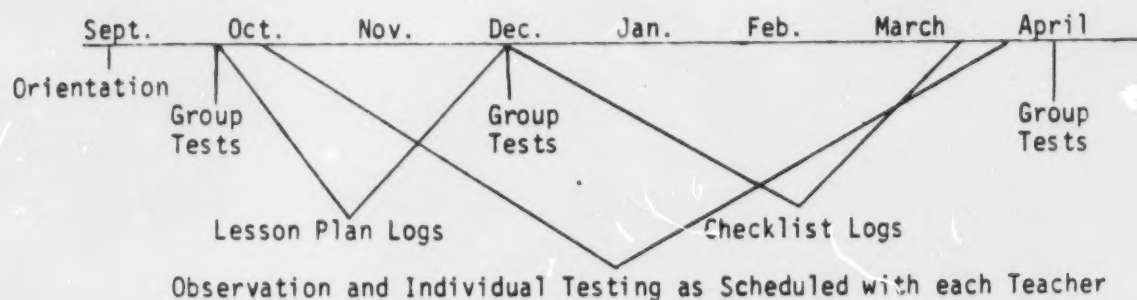
and



FAR WEST LABORATORY

FOR EDUCATIONAL RESEARCH AND DEVELOPMENT

1855 FOLSOM STREET • SAN FRANCISCO CALIFORNIA 94103 • (415) 565-3000

Schedule of Activities for the Study of Teaching 1975-1976September 11 - September 26

Orientation meetings are held with participating teachers and some initial Lesson Plan Logs are kept for practice of the procedure.

September 29 - October 3

Group tests are administered by Far West Laboratory representatives in all participating classes.

September 29 - December 5

All teachers keep Lesson Plan Logs on a daily basis. Completed logs are mailed to Far West Laboratory each week for initial data processing.

October 6 - November 28

Observation and individual testing are conducted as scheduled with each teacher.

December 1 - December 5

Group tests are administered by Far West Laboratory representatives in all participating classes.

December 8 - April

All teachers keep Checklist Logs on a weekly basis. Completed logs are mailed to Far West Laboratory each week for initial data processing.

January - April

Observation and individual testing are conducted as scheduled with each teacher.

April

Group tests are administered by Far West Laboratory representatives in all participating classes.

RECORD-KEEPING INSTRUCTIONS

Each week please use the Lab-addressed and stamped envelopes to send us:

- I. Reading and Math Attendance/Group Composition Records
- II. Reading and Math Logs

1. INSTRUCTIONS FOR ATTENDANCE/GROUP COMPOSITION RECORD

Most of this form is self-explanatory.

1. Give us a copy of your class list and the list of groups for your reading and math instruction. We will type in students' names and duplicate copies for your weekly record-keeping.
2. Fill out information for: Reading or Math, your name and grade.
3. Let us know each week which students changed groups by writing the new group name under the day of the week that the change occurred.
4. Put an X in the appropriate box for each day a student is absent in reading and/or math.

- II. INSTRUCTIONS FOR LESSON PLAN LOGS

Logs will be used for math and reading groups. An individual log is kept daily for each math or reading group. This may mean anywhere from two to eight or ten logs per week.

*Make sure that your name is on each log. Indicate the grade, subject, group name, and week.

***TIME:**

For "time" give the time of day the group starts and finishes working on math or reading. Because it is probable that every class is organized differently, we have left space for you to divide each day for different activities. (See sample logs.)

***CONTENT:**

Using the list of skills for math or reading, show what skills were covered by writing the appropriate number on the "content" line. (It isn't necessary to give the Roman numeral describing the skill clusters since the skills are numbered consecutively.) (See list of skills and glossary.)

***ADULT/NO ADULT:**

Adult/No Adult refers to whether or not an adult is working with the group of students referred to in the log. By "adult" we mean any person--aide, parent, or teacher--who is working with students. (See next page.)

***SEATWORK/OTHER:**

This is meant to distinguish students working independently at their seats from other settings where a student is working with at least one other person (adult or child). (See next page.)

***MATERIAL:**

For materials a teacher might indicate the particular text used and the pages covered or simply say "dittos, see attached."

The interrelationship between the Adult/No Adult distinction and the Seatwork/Other distinction is illustrated by the examples in the matrix below:

	ADULT	NO ADULT
SEATWORK	The students work independently in workbooks while the teacher (or aide) circulates among the students, monitoring their progress and helping when necessary.	The students work independently on a ditto page while the teacher corrects papers at his/her desk.
OTHER	The teacher leads the group in a discussion of a story that the students read earlier.	The students work on a math project in groups of three, while the teacher leads a different group in oral reading.

As can be seen above, it is possible for a teacher to indicate "other" with "no adult" present or "seatwork" with an "adult" present. An adult may be considered to be working with no group at all during some period (as when a teacher corrects papers while students work independently), but no adult should ever be recorded as working with more than one group at a time. Therefore, if an adult is leading a reading group while keeping an eye on some students working independently, that adult should be recorded as working with the reading group because that is the primary focus of the adult's activities. However, if an adult were spending all of his/her time checking with and helping students doing independent seatwork, then that adult would be recorded with the seatwork group.

It should also be noted that it is possible for some students in a group to be working independently (the "seatwork" category) while other students in the same group work in pairs (the "other" category). (This could even be the same assignment.) In this case it would be sufficient to simply record whatever the majority of the students in the group are doing.

ATTENDANCE GROUP COMPOSITION RECORD

B-4

Subject: MATH (circle one) Teacher: _____ Grade: _____

Student's Name	Group	Week of				
		M	T	W	TH	F
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
17.						
18.						
19.						
20.						
21.						
22.						
23.						
24.						
25.						
26.						
27.						
28.						
29.						
30.						
31.						
32.						
33.						
34.						
35.						

TEACHER _____ GRADE _____ READING _____
MATH _____ GROUP _____

TIME: _____

MONDAY

CONTENT

Adult Seatwork
No Adult and Other

MATERIAL

TUESDAY

CONTENT

Adult Seatwork
No Adult and Other

MATERIAL

WEDNESDAY

CONTENT

Adult Seatwork
No Adult and Other

MATERIAL

THURSDAY

CONTENT

Adult Seatwork
No Adult and Other

MATERIAL

FRIDAY

CONTENT

Adult Seatwork
No Adult and Other

MATERIAL

Text - Lippincott C Book
Wkbk - " " " " workbook

* items attached
Bdwb = work copied from board

TEACHER _____ GRADE 2 READING MATH _____ GROUP C WEEK Nov. 3, 1975

		TIME: 9:30-10:30	12:20-1	1:30-1:50	1:50-2:10	2:10-2:30
MONDAY	CONTENT	ABC order - 2nd letter #48,64	~~Other Activity~~	Phonics Test * #1 & 4		Comprehension #36, 37, 39, 40, 57, 62
	Adult and Seatwork No Adult and Other	A+S - 20 min. N+S - 40 min.		N+S		N and S
	MATERIAL	Ditto		Dittoes		Diagnostic Reading Wkwbk. Series Level 2
TUESDAY	CONTENT	ABC order - 2nd letter #48,64	~~Library~~	Long & Short Vowels Verbs - Action Words #4, 5, 6, 59	Long & Short Vowels #4, 5, 6	Vocabulary #12, 13
	Adult and Seatwork No Adult and Other	A+S - 20 min. N+S - 40 min.		A+O	N+S	N+S
	MATERIAL	Ditto		Discussion Examples on board	Ditto *	Flashcards Worked in pairs
WEDNESDAY	CONTENT	Introduction to use of dictionary; ABC order #48, 64	USSR - 10 min. Our Flag discussion Ditto to color #57, 62	Long & Short Vowels & adjectives words #4, 5, 6, 59, 24	Auditory discrim- ination of vowel sounds #4, 5, 6	Visual discrimi- nation of vowel sounds #4, 5, 6
	Adult and Seatwork No Adult and Other	A+S - 40 min. N+S - 20 min.	A+S - 15 min (N.E. trip) N+S - 30 min	N+S	A+O	N+S
	MATERIAL	Patterns of Lang. (2nd Grade)	Ditto	Ditto Master pg. 18 (text series ditto)	Oral drill	Bdwb - marking vowels i: o: rät rät
THURSDAY	CONTENT	Long & Short Vowels marking vowels #4, 5, 6, 64	USSR & storytime 20 min handwriting #57, 62, 63, 64	ABC order - 3rd letter #48, 64	Review Wed's work #4, 5, 6, 59, 24	Visual discrimi- nation of vowel sounds #4, 5, 6
	Adult and Seatwork No Adult and Other	A+S - 20 min. N+S - 40 min.	A+S - 10 min. N+S - 20 min.	N+S	A+O	N+S
	MATERIAL	Bdwb.	Bdwb. Library books	Bdwb	Ditto master pg. 18	Bdwb (same as Wed.)
FRIDAY	CONTENT	Marking vowels: ABC order & handwriting #4, 5, 6, 64	~~ART~~	Sentence com- pletion, silent reading #15, 62	Oral Reading #56, 40	Vocabulary usage & comprehension #30
	Adult and Seatwork No Adult and Other	N+S		N+S	A+O	N+S
	MATERIAL	Bdwb. Handwriting Ditto		Wkwb pg. 28 Text pgs. 35-37	Text - pg. 35	Dolch puzzles Book 1

LIST OF SKILLS FOR READING - GRADES 2 AND 5

I. DECODING (Letter-sound correspondence)

1. Single consonants
2. Consonant blends and digraphs
3. Variant consonants ("c" or "g")
4. Vowels - short
5. Vowels - long vowel with final "e"
6. Vowels - digraphs
7. Vowels - diphthongs
8. Vowels - with "r"
9. Complex, multisyllabic
10. Silent letters
11. Sound substitution tasks
12. Sight words
13. Automaticity of word recognition
14. Other

II. CONTEXT CLUES (Fill blanks, predict)

15. Choosing word(s) which fit grammatical context
16. Choosing word(s) which make best sense (semantic appropriateness)
17. Choosing correct form of word
18. Choosing word with correct initial consonant
19. Choosing correct pronoun
20. Other

III. WORD STRUCTURE

21. Compound words
22. Identification of root words
23. Prefixes - meaning and use

24. Suffixes - meaning and use

25. Contractions

26. Syllables

27. Other

IV. WORD MEANING

28. Synonyms

29. Antonyms

30. Vocabulary building

31. Pronoun reference

32. Multimeaning words in context

33. Unfamiliar words in context

34. Figurative language

35. Other

V. COMPREHENSION - TEXT

36. Understanding event detail

37. Understanding description

38. Understanding relationships

39. Understanding main idea

40. Literal recall

41. Translation of ideas

42. Synthesis of ideas, inference

43. Going beyond the text, prediction

44. Recognizing facts and opinions

45. General comprehension

VI. APPLICATION

46. Understanding directions

47. Picture interpretation to aid comprehension

- 48. Dictionary skills
- 49. Reference sources in books (table of contents, index, glossary)
- 50. Choosing reference sources (dictionary, encyclopedia, card catalog)
- 51. Understanding signs
- 52. Understanding letters
- 53. Understanding maps
- 54. Understanding graphs
- 55. Reading for different purposes
- 56. Oral reading
- 57. Reading for enjoyment
- 62. Silent reading

VII. READING RELATED

- 58. Spelling
- 59. Grammar
- 60. Creative writing
- 61. Reading in content areas
- 63. Listening (to story or tapes)
- 64. Penmanship and copying
- 65. Standardized tests
- 66. Foreign language
- 67. Music (reading lyrics)
- 68. Dramatics (plays, choral reading)

READING GLOSSARY

I. DECODING (Knowledge and use of letter-sound correspondence)

1. Single consonants -
Sounds of single consonants in any position in a word.
Examples: b, c, d, . . .
2. Consonant blends and digraphs
Blends include st, bl, tr, . . .
Digraphs include ch, sh, th, wh.
3. Variant consonants
A comparison of several sounds possible for a single consonant.
Examples: "c" in cat vs city, "g" in goat vs giant
4. Vowel - short
Regular short sound of a, e, i, o, and u
5. Vowel - final e pattern
Long vowel sound when word ends with e, as in rope
6. Vowel digraphs
Include ee, ea, ai, oa, and ay
7. Vowel diphthongs
Include oi, oo, ou, oy, au, and aw
8. Vowel plus r
Vowel sound modified by following consonant r
Examples: ar, er, ir, or, ur, air, ear
9. Complex, multi-syllabic
Decoding of multi-syllabic words, includes internal patterns, syllable influence on vowel decoding
10. Silent consonants
Letters which are not sounded in a word
Examples: comb, knit
11. Sound substitution tasks
Substituting one sound for another to create a new word.
Example: fan, an, p, pan
12. Sight words
Recognition of common words, especially function words (the, of, to, would, could, were) and words with irregular spelling (are, come, put)
13. Automaticity of word recognition
Practice to improve speed of word recognition, so that the process becomes automatic.

II. CONTEXT CLUES

Context clues involve using the context of a phrase, sentence, or story to help identify a word or to predict a missing part. Different types

of context clues emphasize different aspects of the linguistic context or of the word to be identified.

15. Choosing word(s) which fit the grammatical context.

Father is sleeping _____ the bed.

night
in
warm

16. Choosing the word(s) which make best sense in the blank.

The _____ lives in the royal palace with her father.

princess
prince
sister

17. Choosing the correct form of a word.

Both of the _____ are asleep.

baby
babying
babies

18. Choosing the word with the correct initial consonant.

Don't _____ the milk.

sill
spill
still

19. Choosing correct pronoun.

John dropped his book and then picked _____ up.

them
it
him

III. WORD STRUCTURE

21. Compounds

Words formed by combining two smaller words - "mailbox"

22. Identification of root words

Recognizing the root word in a derived form - "playing" root = play

23. Prefixes -

Include re-, un-, dis-, pre-, . . .

24. Suffixes

Include grammatical endings like -s, -ed, and -ing and other suffixes like -ly, -ful, -ness, -less . . .

25. Contractions

do not - don't

26. Syllables - separation of a word into sound units pre am ble

IV. WORD MEANING

28. Identifying words with similar meanings - quick = fast
29. Antonyms
Identifying words with opposite meanings - large vs. small
30. Vocabulary building
Learning word meanings
31. Pronoun reference
Identifying the referent of a pronoun.
"John washed his car." his=John's
32. Multi-meaning words in context
Identifying the specific meaning of a word in a particular context.
I cut my hand on a piece of paper.
 - a. part of a clock
 - b. part of a person
 - c. give something
33. Unfamiliar words in context
Deducing the meaning of an unfamiliar word through its use in context.
The car was so badly entrenched in the mud that we had to call a tow truck.
 - a. stuck
 - b. built
 - c. dirty
34. Figurative language
Recognizing the meaning of a word or phrase used in a nonliteral sense, including simile, metaphor, and idiomatic expressions.
The soldier fought like a tiger to protect his home.
 - a. in a striped uniform
 - b. with sharp claws
 - c. bravely and fiercely

Oh, how Peter wished he could whistle! Peter saw his friend Sam playing with a dog. Whenever Sam whistled, the dog ran straight to him. Peter wished he could do that trick with his own dog, Willie. Peter tried and tried to whistle, but he just couldn't.

Peter went into his house and put on his father's old hat, to make himself feel more grown-up. He looked into the mirror to practice whistling. Still no whistle!

The next day Peter went outside to play. He sat on the front steps and tried to whistle. Then Peter saw his dog coming. Quick as a wink, Peter hid behind the stairs. He wanted to surprise Willie with a whistle. Peter puffed up his cheeks. He blew and blew and blew. Suddenly, out came a real whistle. Willie stopped and looked around to see who was making the noise.

"It's me," Peter shouted. He jumped out from behind the stairs. Willie raced straight up to him.

The following illustrations refer to the story above.

V. COMPREHENSION

36. Understanding event detail. What did Peter put on?
37. Understanding description - Where did Peter hide?
How did Peter feel at the end of the story?
38. Understanding relationships - What happened first?
Why did Willie stop and look around?
39. Understanding the main idea - What is the story mostly about?
What lesson can we learn from the story?
40. Literal recall - recall of information exactly as stated in the story.
What did Peter wish he could do?
a. have a dog
b. whistle
c. go to school
41. Translation of ideas
Recognizing ideas stated in different words; ability to paraphrase;
recall of information when ideas are restated.

What happened when Sam whistled?
a. Peter went over to see Sam
b. A dog went over to see Sam
c. Peter whistled too
42. Synthesis of ideas, inference
Ability to integrate information from different points in a text;
understanding ideas directly implied by a text.
What trick did Peter want to do with his dog?
a. teach Willie to whistle
b. put an old hat on Willie
c. whistle to call Willie
43. Going beyond the text, prediction
Relating the text to one's own knowledge and experience; supplying
from experience information not directly given in a text. Includes
predicting what might come next in a story.
How did Peter feel when Willie came running?
a. happy
b. scared
c. mad
44. Recognizing facts and opinions
Evaluating statements and the basis for their acceptance.
Included evaluating the qualifications of a speaker.
Which of the following is a fact rather than an opinion?
a. The Etruscans built cities long ago.
b. The jewelry made by the Etruscans was the most
beautiful ever made.
c. Historians do not know as much as archeologists do.

45. General Comprehension

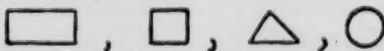
Silent reading or general reading practice, where comprehension involves a mixture of the facets above: (Please use one or more of the specific categories, if possible.)

LIST OF SKILLS FOR MATH - GRADE 2

I. Computation

1. Addition without regrouping
2. Addition with regrouping
3. Subtraction without regrouping
4. Subtraction with regrouping
5. Multiplication - with both factors being less than 10.
6. Speed tests/timed drill in addition
7. Speed tests/timed drill in subtraction
8. Number sentences involving equalities and inequalities
9. Family of facts/renaming numerals equation form
10. Number patterns/sequences
11. Other
25. Missing Addends - both in addition & subtraction

II. Concepts

12. Numerals and ordinals
13. Place value with compact or expanded notation
14. Fractions involving sets, regions, or lines ($\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$)
15. Properties (associative, commutative, and identity elements)
16. Associative property with expanded notation
17. Money
18. Linear measurement
19. Measurement concepts: order, capacity, conservation of length.
20. Geometric figures:

21. Curves and points
22. Other
26. Developmental activities

III. Applications

23. Word Problems
24. Other
27. Standardized test

MATH GLOSSARY - GRADE 2

- # 8 Number sentences: equalities and inequalities
 Determining what sign is missing in an equation or number sentence.
 Primarily involving the signs of $>$, $<$, and $=$. But may also involve $+$ and $-$.

Examples: $5 \ominus 4$
 $2 + 1 \oplus 3$
 $3 \oplus 4 = 7$

- # 9 Family of Facts (renaming numerals, equation form)

Example: Given 2 addends and a sum, write all the equations possible.

$$\begin{array}{ll} 3 + 2 = 5 & 5 - 2 = 3 \\ 2 + 3 = 5 & 5 - 3 = 2 \end{array}$$

Write n equations renaming the numeral 7.

$$\begin{array}{lll} 4 + 3 = 7 & 9 - 2 = 7 & \\ 5 + 2 = 7 & 8 - 1 = 7 & \text{etc.} \\ 6 + 1 = 7 & 10 - 3 = 7 & \end{array}$$

- # 10 Number patterns
 Emphasis is on completing the pattern and/or discovering the rule.
 May ask "What is the next number?" or "What rule did you use to find the missing number?"

Examples: a. 2, 4, 6, ?, ?, 12 (series)

b. $\begin{array}{c|c|c|c|c} 2 & 3 & 4 & ? & ? \\ \hline 4 & 6 & ? & ? & 12 \end{array}$ (input/output function)

c. $\begin{array}{c|c|c|c} 4 & ? & 10 & \\ \hline 3 & 5 & ? & \\ \hline ? & ? & ? & 18 \end{array}$ (magic squares)

d. $[(1,3) (2,4) (? , 5) (? , ?)]$ (set of number pairs)

- # 15 Properties
 Situations often arise in the teaching of basic facts, computation, etc. where particular items may illustrate certain basic properties. However, for the log, we are interested in lesson segments where attention is given or drawn to a particular property or the lesson involves a series of computational items which involve application/use of a property.

15 Properties (continued)

1. Commutative (order): emphasis or attention at this stage is focused on the reversability of order.

Examples: $2 + 4 = 4 + 2$

$$3 \times 2 = 2 \times 3$$

or $6 + 1 = 7, 1 + 6 = 7$ (When these equations appear together and attention is drawn to reversability)

2. Associative (grouping): manner in which numbers are grouped does not affect sum.

Examples: $(2 + 3) + 5 = 5 + 5$

$$2 + (3 + 5) = (2 + 3) + 5$$

or can be combined with expanded notation:

$$\begin{array}{rcl} 78 + 2 & = & 70 + (8 + 2) \\ & = & 70 + 10 \\ & = & 80 \end{array} \quad \begin{array}{rcl} 38 & = & 30 + 8 \text{ so} \\ 38 - 5 & = & (30 + 8) - 5 \\ & = & 30 + (8 - 5) \\ & = & 30 + 3 \\ & = & 33 \end{array}$$

3. Inverse: Addition is inverse of subtraction.

Examples: $13 + 1 = 14$

$$14 - 1 = 13$$

$$\begin{array}{r} 91 \quad 44 \\ -47 \quad +47 \\ \hline 44 \quad 91 \end{array}$$

4. Identity elements: zero for addition and subtraction, one for multiplication.

Examples: $3 + 0 = 3$

$$4 - 0 = 4$$

$$1 \times 6 = 6$$

Glossary Addendum#25 - Missing Addends

The purpose of this category is to separate the use of the missing addend format from the standard equation (sum or difference) format. It includes both the addition and subtraction processes.

Examples: missing addends

$$\begin{array}{r} \square \\ - 4 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 7 \\ - \square \\ \hline 2 \end{array}$$

$$\begin{array}{r} \square - 4 = 5 \\ 3 + \square = 24 \\ 7 - \square = 2 \end{array}$$

$$\begin{array}{r} 1 = \square - 5 \\ 9 = \square + 6 \\ 7 = 12 - \square \end{array}$$

$$\begin{array}{r} \square \\ + 6 \\ \hline 9 \end{array}$$

$$\begin{array}{r} 3 \\ + \square \\ \hline 24 \end{array}$$

Standard format problems should not be coded under #25 but rather #1, 3, or 9.

Examples: standard format

$$\begin{array}{r} 3 \quad 4 \\ + 2 \quad - 1 \\ \hline \end{array}$$

$$\begin{array}{r} 3 + 2 = \square \\ 3 - 1 = \square \end{array}$$

$$\begin{array}{r} \square = 3 + 2 \\ \square = 4 - 1 \end{array}$$

Work involving missing addends will often be combined with family of facts. Page 45, 46, and 47 of Modern School Mathematics, Houghton-Mifflin illustrates such a combination. Since these pages involve both the family of facts and missing addends they would be coded as #9 and #25.

#26 - Developmental Activities

This category is designed to reflect classroom activities that most often involve pre-operational concepts and/or developmental activities through the use of manipulatives and other concrete materials.

These activities may often be provided through a Math Lab. Using uni-flex cubes, cuisenaire rods, attribute blocks, pattern blocks, geoboards, etc. to develop skills in sorting, matching, comparing, symmetry, equivalence, pattern perception, visual discrimination, free exploration and pre-operational games.

Examples:

A.	Making 1,2, pattern w/2 colors of cuisenaire rods and then drawing pattern. A + 0 Cuisenaire rods, crayons, paper	=	#26 (1,2, pattern) A + 0 Cuisenaire rods, crayons, paper
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B.	Sorting, matching comparing shapes	=	#26
	A + 0		A + 0
	Pattern blocks		Pattern blocks

Combinations:

C.	Patterns, counting sets	=	#26 + #12
	A + 0		A + 0
	Unifix cubes, paper & pencil		Pattern blocks

D.	Sorting, matching identifying geo- metric figures (○△□)	=	#26 + #20
	A + 0		A + 0
	Pattern blocks		Pattern blocks

Not to be coded as #26

Using cuisenaire rods, bean sticks, etc. to teach addition, subtraction, family of facts, place value, etc. Here the objectives would be recorded under the skill codes #1, 3, 9, 13, etc. The materials used to teach these skills would be indicated on the log in the material section.

LIST OF SKILLS FOR MATH - GRADE 5

I. Computation

A. Whole Numbers

1. Addition
2. Subtraction
3. Multiplication
4. Division
30. Speed tests/timed drill in addition
31. Speed tests/timed drill in subtraction
32. Speed tests/timed drill in multiplication
33. Speed tests/timed drill in division
6. Other

B. Rational Numbers

7. Identify equivalent fractions
8. Addition of fractions
9. Subtraction of fractions
10. Decimals - addition and subtraction of decimals involving tenths and hundredths
11. Other

II. Concepts

A. Place Value

12. Decimals - tenths and hundredths
13. Whole numbers through to millions

B. Properties

14. Associative, commutative, distributive, identity elements, and inverse relationships

C. Number Theory

15. Factors and prime factorization

D. Metric Geometry: recognize and compute

16. Perimeter of polygons
17. Area of squares, rectangles, triangles, and parallelograms
18. Volume

E. Non-metric Geometry: recognize and identify

19. Lines, line segments, angles, parallel and perpendicular lines
20. Plane geometric figures

F. Statistics

- 21. Line and bar graphs
- 22. Number pairs on number plane
- 23. Compute average of group of numbers

G. Number Patterns

- 24. Number patterns and input - output function rules
- 25. Other

III. Application

- 26. One step word problems
- 27. Two step word problems
- 28. Word problems involving common measures (yards, feet, inches, time, liquid measures, etc.)
- 29. Other
- 34. Standardized testing

MATH GLOSSARY - GRADE 5

A. Number patterns

Emphasis is on completing the pattern and/or discovering the rule. May ask "What is the next number?" or "What rule did you use to find the missing number?"

Examples: a. 2, 4, 6, ?, ?, 12 (series)

$$\begin{array}{c|c|c|c|c} 2 & 3 & 4 & ? & ? \\ \hline 4 & 6 & ? & ? & 12 \end{array} \quad (\text{input/output function})$$

$$\begin{array}{c|c|c} 4 & ? & 10 \\ \hline 3 & 5 & ? \\ \hline ? & 11 & 18 \end{array} \quad (\text{magic squares})$$

d. [(1,3) (2,4) (?,5) (?,?)] (set of number pairs)

B. Properties

Situations often arise in the teaching of basic facts, computation, etc. where particular items may illustrate certain basic properties. However, for the log, we are interested in lesson segments where attention is given or drawn to a particular property or the lesson involves a series of computational items which involve application/use of a property. (This doesn't include lessons where the main focus is on memorizing the names and definitions of the properties--application or use is what we're interested in whether or not the students know the names of the properties.)

1. Associative (grouping):

$$8 \times (2 \times 5) = (8 \times 5) \times 2$$

$$6 + (5 + 4) = (6 + 4) + 5$$

2. Commutative (order):

$$A + B = B + A$$

$$A \times B = B \times A$$

3. Distributive: Multiplication is distributive over addition.

$$5 \times 7 = (5 \times 5) + (5 \times 2)$$

$$4 \times (8 + 5) = (4 \times 8) + (4 \times 5)$$

4. Inverse: Addition and subtraction are inverse operations as are multiplication and division

$$18 - 3 = 15$$

$$15 + 3 = 18$$

$$3 \times 6 = 18$$

$$18 \div 3 = 6$$

$$18 \div 6 = 3$$

5. Identity elements: Zero is identity element for addition and subtraction and one is the identity element for multiplication and division.

$$99 + 0 = 99$$

$$99 - 0 = 99$$

$$99 \times 1 = 99$$

$$99 \div 1 = 99$$

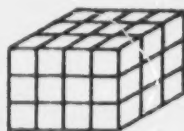
C. Factors and prime factorization

Work involving the identification of factors, common factors, or greatest common factor, and the prime factorization of a number.

D. Metric Geometry

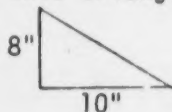
Recognize: finding the perimeter, area, or volume of a figure using arbitrary units of measure. ie.

How many cubic units in this space figure?



Compute: using the appropriate formula to find the perimeter, area, or volume of a figure. ie.

The area of this triangle is ?



Instructions for Content Checklist

During the second half of the school year, we would like to continue to keep track of the content of reading instruction in your classroom. We would like to know what skill areas you are working on with individual students. As before, this information will help us match our test items to the content of instruction in the classroom. We can then evaluate test items on the sensitivity with which they reflect student learning.

The new procedure for record-keeping is a content checklist. You will no longer have to record information about setting, or about materials, or about precise time of instruction. Instead we ask you to check off, each week, the content categories worked on by students in your class. A sample checklist is shown on the next page.

Some important things to know about the checklist logs are listed below:

1. The content categories are selected from the list you used before. Sometimes categories from that old list have been combined for the checklist. The numbers in front of each content category refer to the numbers in that original list. You can use the Glossary and the Manual for Interpreting Test Scores to be sure you understand what each category refers to. If you have questions about the best code for some classroom exercise, please feel free to send us copies of materials. Or call the staff (collect) with a question.
2. As before, we need to know the content of instruction for each student in the class. If a group of students receives the same instruction, then you can check off content for the group as a whole. (See the sample checklist). Use the class list to tell us which students are in each group. If instruction is different for each student, then check off content for each student individually.
3. Although we don't need exact estimates of the amount of time spent on each content area, we would like to differentiate between relatively brief work in an area and a more extended effort. To simplify your task, you may omit completely any area in which less than 10 minutes work took place during the week. For example, during a reading lesson one day, a teacher might include a 5 minute review of the short vowel sounds. If this were the only work on short vowel sounds during the week, it is not necessary to check this category. If more than 10 minutes was spent working in an area, then estimate the total time accumulated during the week. Code the total time according to the following categories:

11-30 minutes	-	L
31-90 minutes	-	M
over 90 minutes	-	H
4. Please send in an attendance/group composition sheet and one checklist log each week.

Grade 2 Reading

Teacher: _____

Week: _____

Code:

0-10 minutes
11-30 minutes
31-90 minutes
over 90 minutes

blank B-25
L
M
H

CONTENT		
DECODING	Single consonants	1.
	Consonant blends and digraphs	2.
	Variant consonants (c,g)	3.
	Vowels--short	4.
	Vowels--long with final e	5.
	Vowels--digraphs	6.
	Vowels-diphthongs	7.
	Vowels--with r (car)	8.
	Complex, multisyllabic	9.
	Silent letters	10.
	Sound substitution, rhyming	11.
	Automaticity of decoding	13.
CON-TEXT CLUES	Any use of format where child must choose a word to fill a blank	15-20.
WORD STRUCTURE	Compound words	21.
	Identification of root words	22.
	Prefixes--meaning and use	23.
	Suffixes--meaning and use	24.
	Contractions	25.
	Syllables	26.
WORD MEANING	Synonyms	28.
	Vocabulary (definitions)	30.
	Pronoun reference	31.
	Multimeaning words in context	32.
	Unfamiliar words in context	33.
COMPREHENSION OF TEXT	Understanding event detail	36.
	Understanding descriptions	37.
	Understanding relationships	38.
	Understanding main ideas	39.
	Direct recall of information	40, 41.
	Inference, interpretation	42, 43.
APPLICATION	Understanding directions	46.
	Picture interpretation to aid comprehension	47.
	Table of contents	49.
	Understanding of signs	51.
	Understanding letters	52.
GENERAL ACTIVITIES	Sight words (general practice at reading single words; no specific decoding emphasis)	12.
	Spelling (use specific code, if applicable)	58.
	Oral reading of text	56.
	Silent reading of text	62.
	Creative writing	60.
	Penmanship and copying	64.

Grade 2 Reading

 Code: 0-10 minutes
 11-30 minutes
 31-90 minutes
 over 90 minutes

 blank B-26
 L
 M
 H
Teacher: JonesWeek: Jan. 5-9

	CONTENT		Group A	Group B	
DECODING	Single consonants	1.		L	
	Consonant blends and digraphs	2.	M	M	
	Variant consonants (c, g)	3.	M		
	Vowels--short	4.	M	M	
	Vowels--long with final e	5.	M	M	
	Vowels--digraphs	6.	M		
	Vowels--diphthongs	7.	M		
	Vowels--with r (car)	8.			
	Complex, multisyllabic	9.			
	Silent letters	10.			
	Sound substitution, rhyming	11.		L	
	Automaticity of decoding	13.			
CON- TEXT CLUES	Any use of format where child must choose a word to fill a blank	15-20.			
WORD STRUCTURE	Compound words	21.			
	Identification of root words	22.		L	
	Prefixes--meaning and use	23.			
	Suffixes--meaning and use	24.	L	L	
	Contractions	25.			
	Syllables	26.			
WORD MEANING	Synonyms	28.			
	Vocabulary (definitions)	30.		L	
	Pronoun reference	31.			
	Multimeaning words in context	32.			
	Unfamiliar words in context	33.			
COMPREHEN- SION OF TEXT	Understanding event detail	36.		L	
	Understanding descriptions	37.	L		
	Understanding relationships	38.			
	Understanding main ideas	39.			
	Direct recall of information	40, 41.		L	
	Inference, interpretation	42, 43.			
APPLICATION	Understanding directions	46.			
	Picture interpretation to aid comprehension	47.			
	Table of contents	49.			
	Understanding of signs	51.			
	Understanding letters	52.			
GENERAL ACTIVITIES	Sight words (general practice at reading single words; no specific decoding emphasis)	12.			
	Spelling (use specific code, if applicable)	58.	M	M	
	Oral reading of text	56.	L	M	
	Silent reading of text	62.	L	L	
	Creative writing	60.			
	Penmanship and copying	64.	M	M	

Grade 2 Mathematics

Code:

0-10 minutes

blank

Teacher: Howard

11-30 minutes

L

31-90 minutes

M

Week: Jan 12 - 16th

over 90 minutes

H

CONTENT	Group #1	Group #2	
I COMPUTATION			
1. Addition without regrouping	L	M	
2. Addition with regrouping	M		
3. Subtraction without regrouping		M	
4. Subtraction with regrouping			
5. Multiplication			
6. Speed tests in addition			
7. Speed tests in subtraction			
8. Number sentences involving $<, >, =, +, -$			
9. Family of facts	L	L	
10. Number patterns	L	L	
25. Missing addends			
II CONCEPTS AND APPLICATION			
12A. Numerals			
12B. Ordinals			
13. Place value	L	L	
14. Fractions			
15. Properties			
16. Associative property with expanded notation	L		
17. Money			
18. Linear measurement			
19. Measurement concepts			
20. Geometric figures			
21. Curves and points			
26. Developmental activities			
23. Word problems	L	L	

Grade 5 Reading

Code: 0-10 minutes blank
 11-30 minutes L
 31-90 minutes M
 over 90 minutes H

Teacher: _____

Week: _____

CONTENT			
DECODING	Variant consonants (c,g)	3.	
	Vowels--short	4.	
	Vowels--long	5.	
	Vowels--with r	8.	
CON- TEXT CLUES	Any use of format where child must choose a word to fill a blank.	15-20.	
WORD STRUC- TURE	Identification of root words	22.	
	Prefixes--meaning and use	23.	
	Suffixes--meaning and use	24.	
	Syllables	26.	
WORD MEANING	Synonyms	28.	
	Vocabulary (definitions)	30.	
	Pronoun reference	31.	
	Multimeaning words in context	32.	
	Unfamiliar words in context	33.	
	Figurative language	34.	
COMPREHENSION OF TEXT	Understanding event detail	36.	
	Understanding description	37.	
	Understanding relationships	38.	
	Understanding main ideas	39.	
	Literal recall	40.	
	Translation of ideas, paraphrase	41.	
	Synthesis of ideas, inference	42.	
	Going beyond the text, prediction	43.	
	Recognizing facts and opinions	44.	
	General comprehension	45.	
APPLICATION	Understanding directions	46.	
	Reference sources in books (table of contents, index, glossary)	49.	
	Choosing reference sources (dictionary, encyclopedia, card catalog)	50.	
	Understanding signs	51.	
	Understanding letters	52.	
	Understanding maps	53.	
GENERAL ACTIVITIES	Oral reading	56.	
	Silent reading	62.	
	Spelling (use specific code, if applicable)	58.	
	Grammar	59.	
	Creative writing	60.	
	Reading in content areas (for science and social studies, use this code only)	61.	

Grade 5 Mathematics

Teacher: _____

Week: _____

Code:

 0-10 minutes
 11-30 minutes
 31-90 minutes
 over 90 minutes

 blank
 L
 M
 H

CONTENT			
I WHOLE NUMBERS			
1. Addition			
2. Subtraction			
3. Multiplication			
4. Division			
30. Speed tests in addition			
31. Speed tests in subtraction			
32. Speed tests in multiplication			
33. Speed tests in division			
II FRACTIONS AND DECIMALS			
7. Equivalent fractions			
8. Addition of fractions			
9. Subtraction of fractions			
10. Addition and subtraction of decimals			
III CONCEPTS AND APPLICATION			
12. Place value: decimals			
13. Place value: whole numbers			
14. Properties			
15. Factors			
16. Perimeter			
17. Area			
18. Volume			
19. Lines, angles, etc.			
20. Geometric figures			
21. Line and bar graphs			
22. Number pairs			
23. Statistics: compute average			
24. Number patterns			
26. Word problems: one step			
27. Word problems: two step			
28. Word problems: common measures			

ATTENDANCE / GROUP COMPOSITION RECORD

B-30

Student's Name _____ Math (circle one) _____ Teacher _____ Grade _____

Student's Name	Group	Week of				
		M	T	W	TH	F
1.						
2.						
3.						
4.						
5.						
6.						
7.						
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